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PLAN & ENVIRONMENTAL IMPACT STATEMENT

FLINT CREEK WATERSHED

ONTARIO, STEUBEN AND YATES COUNTIES NEW YORK

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Syracuse, New York

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PLAN AND ENVIRONMENTAL IMPACT STATEMENT

FLINT CREEK WATERSHED

Ontario, Yates, and Steuben Counties, New York

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CATALOGING - PREP.

Prepared Under the Authority of the Watershed Protection and Flood Prevention Act (Public Law 566, 83d Congress, 68 Stat. 666), as amended and in Accordance with the National Environmental Policy Act of 1969, Section 102 (2) (C) Public Law 91-190-91st Congress 83rd Stat. 853.

Prepared by: Ontario County Board of Supervisors
Yates County Board of Supervisors
Ontario County Soil and Water Conservation District
Yates County Soil and Water Conservation District
Steuben County Soil and Water Conservation District
U.S. Department of Agriculture, Soil Conservation Service
U.S. Department of Agriculture, Forest Service

February 1976

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PART I

FLINT CREEK WATERSHED

PART I - PLAN

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PLAN AGREEMENT

between the

ONTARIO COUNTY BOARD OF SUPERVISORS
YATES COUNTY BOARD OF SUPERVISORS
ONTARIO COUNTY SOIL AND WATER CONSERVATION DISTRICT
YATES COUNTY SOIL AND WATER CONSERVATION DISTRICT
STEUBEN COUNTY SOIL AND WATER CONSERVATION DISTRICT

(hereinafter referred to as the Sponsoring Local Organization)

State of New York

and the

Soil Conservation Service
United States Department of Agriculture
(hereinafter referred to as the Service)

Whereas, application has heretofore been made to the Secretary of Agriculture by the Sponsoring Local Organization for assistance in preparing a plan for works of improvement for the Flint Creek Watershed, State of New York, under the authority of the Watershed Protection and Flood Prevention Act (P.L. 566, 83d Congress; 68 Stat. 666), as amended; and

Whereas, the responsibility for administration of the Watershed Protection and Flood Prevention Act, as amended, has been assigned by the Secretary of Agriculture to the Service; and

Whereas, there has been developed through the cooperative efforts of the Sponsoring Local Organization and the Service a mutually satisfactory plan for works of improvement for the Flint Creek Watershed, State of New York, hereinafter referred to as the plan, of which this agreement is a part;

Now, therefore, in view of the foregoing considerations, the Sponsoring Local Organization and the Secretary of Agriculture, through the Service, hereby agree on the plan, and further agree that the works of improvement as set forth in said plan can be installed in about five years.

It is mutually agreed that in installing and operating and maintaining the works of improvement substantially in accordance with the terms, conditions, and stipulations provided for in the plan:

1. The Sponsoring Local Organization will acquire such landrights as will be needed in connection with the works of improvement. (Estimated cost $95,600.)

2. The Sponsoring Local Organization assures that comparable replacement dwellings will be available for individuals and persons displaced from dwellings, and will provide relocation assistance advisory services and relocation assistance, make the relocation payments to displaced persons, and otherwise comply with the real property acquisition policies contained in the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646, 84 Stat. 1894) effective as of January 2, 1971, and the Regulations issued by the Secretary of Agriculture pursuant thereto. The costs of relocation payments will be shared by the Sponsoring Local Organization and the Service as follows:

	Sponsoring Local Organization (percent)	Service (percent)	Estimated Relocation Payment Costs (dollars)
Relocation Payments	27.6	72.4	0 1/

1/ Investigation has disclosed that under present conditions the project measures will not result in the displacement of any person, business, or farm operation. However, if relocations become necessary, relocation payments will be cost shared in accordance with the percentages shown.

3. The Sponsoring Local Organization will acquire or provide assurance that landowners or water users have acquired such water rights pursuant to state law as may be needed in the installation and operation of the works of improvement.

4. The percentages of construction costs of structural measures to be paid by the Sponsoring Local Organization and by the Service are as follows:

Works of Improvement	Sponsoring Local Organization (percent)	Service (percent)	Estimated Construction Cost (dollars)
All Structural Measures	0	100	1,216,600

5. The percentages of the engineering costs to be borne by the Sponsoring Local Organization and the Service are as follows:

Works of Improvement	Sponsoring Local Organization (percent)	Service (percent)	Estimated Engineering Costs (dollars)
All Structural Measures	0	100	156,300

6. The Sponsoring Local Organization and the Service will each bear the costs of Project Administration which it incurs, estimated to be $34,400 and $165,800 respectively.

7. The Sponsoring Local Organization will provide assistance to landowners and operators to assure the installation of the land treatment measures shown in the plan.

8. The Sponsoring Local Organization will encourage landowners and operators to operate and maintain the land treatment measures for the protection and improvement of the watershed.

9. The Sponsoring Local Organization will be responsible for the operation and maintenance of the structural works of improvement by actually performing the work or arranging for such work in accordance with agreements to be entered into prior to issuing invitations to bid for construction work.

10. The costs shown in this agreement represent preliminary estimates. In finally determining the costs to be borne by the parties hereto, the actual costs incurred in the installation of works of improvement will be used.

11. This agreement is not a fund obligating document. Financial and other assistance to be furnished by the Service in carrying out the plan is contingent on the availability of appropriations for this purpose.

    A separate agreement will be entered into between the Service and the Sponsoring Local Organization before

either party initiates work involving funds of the other party. Such agreement will set forth in detail the financial and working arrangements and other conditions that are applicable to the specific works of improvement.

12. The plan may be amended or revised, and this agreement may be modified or terminated, only by mutual agreement to the parties hereto except for cause. The Service may terminate financial and other assistance in whole, or in part, at any time whenever it is determined that the Sponsoring Local Organization has failed to comply with the conditions of this agreement. The Service shall promptly notify the Sponsoring Local Organization in writing of the determination and the reasons for the termination, together with the effective date. Payments made to the Sponsoring Local Organization or recoveries by the Service under projects terminated for cause shall be in accord with the legal rights and liabilities of the parties.

13. No member of or delegate to congress, or resident commissioner, shall be admitted to any share or part of this agreement, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this agreement if made with a corporation for its general benefit.

14. The program conducted will be in compliance with all requirements respecting nondiscrimination as contained in the Civil Rights Act of 1964, as amended, and the regulations of the Secretary of Agriculture (7 C.F.R. 15.1-15.12), which provide that no person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any activity receiving federal financial assistance.

15. This agreement will not become effective until the Service has issued a notification of approval and authorizes assistance.

______________________ By______________________
Local Organization

Title______________________

____
Address Zip Code

Date______________________

The signing of this agreement was authorized by a resolution of the governing body of the______________________
Local Organization

adopted at a meeting held on______________________

______________________ ______________________
Secretary, Local Organization Address Zip Code

Date______________________

______________________ By______________________
Local Organization

Title______________________

____
Address Zip Code

Date______________________

The signing of this agreement was authorized by a resolution of the governing body of the______________________
Local Organization

adopted at a meeting held on______________________

______________________ ______________________
Secretary, Local Organization Address Zip Code

Date______________________

______________________ By______________________
Local Organization

Title______________________

____
Address Zip Code

Date______________________

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Local Organization
adopted at a meeting held on______________________

______________________ ______________________
Secretary, Local Organization Address Zip Code
Date______________________

_____ By _____
Local Organization

Title _____

_____
Address Zip Code Date _____

The signing of this agreement was authorized by a resolution of the governing body of the _____
Local Organization
adopted at a meeting held on _____

_____ _____
Secretary, Local Organization Address Zip Code

Date _____

_____ By _____
Local Organization

Title _____

_____
Address Zip Code Date _____

The signing of this agreement was authorized by a resolution of the governing body of the _____
Local Organization
adopted at a meeting held on _____

_____ _____
Secretary, Local Organization Address Zip Code

Date _____

Appropriate and careful consideration has been given to the environmental statement prepared for this project and to the environmental aspects thereof.

Soil Conservation Service
United States Department of Agriculture

Approved by:

_____
State Conservationist

_____
Date

FLINT CREEK WATERSHED

ONTARIO, YATES, AND STEUBEN COUNTIES

SUMMARY OF PLAN

Flint Creek Watershed, located in western New York, has a drainage area of 64,860 acres. The Sponsoring Local Organizations are the Ontario County Board of Supervisors, the Yates County Board of Supervisors, the Ontario County Soil and Water Conservation District, the Yates County Soil and Water Conservation District, and the Steuben County Soil and Water Conservation District.

The primary soil and water resource problem is periodic inundation of high value vegetable crops on about 1,695 acres of muckland. The present channels in the problem area are adequate in depth and capacity for drainage purposes. However, excess runoff from the upland areas flood the muck on an annual basis. Sheet erosion rates of about 11 tons per acre per year are occurring on about 13,279 acres of cropland. Soil losses by wind erosion on the muckland are about 1/4 to 1/2 inch annually where fields are not adequately protected. Subsidence is occurring at a rate of about 0.6 inches per year.

Estimated average annual floodwater damages of $149,600 are occurring to crops. Other agricultural damages, such as damages to onfarm drainage systems and buildings, are about $14,400. Estimated average annual erosion and sediment damages are $37,400. Indirect flood damages, including disruption of transportation and utilities, are estimated at $16,400.

This plan provides for the installation of land treatment measures and the installation of 43 structures for water control, and 18.7 miles of channel work including the enlargement of about 8.1 miles of existing intermittent, manmade ditches located principally on cropland. The land treatment measures and structural measures will be installed during a 5-year installation period.

Installation of the land treatment measures will reduce erosion rates on upland cropland to less than 5.5 tons per acre annually. Sediment concentrations at the mouth of the watershed will be reduced from 235 to 149 milligrams per liter.

Project measures will reduce annual floodwater damages by about 73 percent. Agricultural damages will be eliminated throughout the life of the project from growing season storms up to the 8-year frequency event with some damages remaining from storms of greater magnitude. About ten muckland farms or about 35 people will receive direct floodwater reduction benefits. Indirect flood damage reduction benefits will be derived by reducing interruptions of utilities and commerce.

About 238 acres of land will be committed to the channel system during construction of the project. Present land use includes 65 acres of channels and travelways, 153 acres of cropland, 13 acres of forest land, and 7 acres of grassland. With project installation, there will be 97 acres committed to channels and travelways, 125 acres of cropland, and 16 acres of grassland. Twenty-eight acres of muckland will be removed from agricultural production. Nine acres of grassland will be gained and 13 acres of forest land will be lost. Perennial weed growth on existing channel banks will be replaced by permanent seedings of grasses and legumes, providing nesting cover for songbirds and waterfowl. Muskrat activity in the channel will be temporarily disturbed during construction.

The Steuben, Yates, and Ontario Counties Soil and Water Conservation Districts will be responsible for planning land treatment measures with technical assistance provided by the Soil Conservation Service and the Forest Service. Landowners and operators, with assistance furnished by the Soil Conservation Service and Forest Service, will be responsible for establishing and maintaining these practices. The Flint Creek Small Watershed Protection District, to be established by the Ontario County Board of Supervisors and the Yates County Board of Supervisors, will provide landrights, and the Soil Conservation Service will provide engineering services required for the installation of the structural measures. The Small Watershed Protection District will let and administer construction contracts. However, at a later date the Sponsors may request the service to perform this function. The Sponsors and the service will bear project administration costs that each incurs.

Total installation cost of the combined land treatment and structural measures is about $2,346,700. Of this amount, $1,699,400 will be paid by P.L. 566 funds and $647,300 will be paid by other funds. Total land treatment cost is $678,000, including $160,700 from P.L. 566 funds for technical assistance and $517,300 from other funds. Total structural measures cost is $1,668,700, including $1,538,700 from P.L. 566 funds and $130,000 from other funds.

The average annual operation and maintenance cost of $10,000 for the structural measures will be borne by the Flint Creek Small Watershed Protection District to be established by the Ontario and Yates Counties' Board of Supervisors, and will be financed by taxes levied on the beneficiaries. The average annual cost of the structural measures is estimated to be $139,000. These measures are expected to produce average annual benefits of $249,200. The ratio of the total average annual benefits to the average annual cost of structural measures is 1.8 to 1.0.

All information and data, except as otherwise noted by reference to source, were collected during watershed planning investigation by the Soil Conservation Service and the Forest Service of the United States Department of Agriculture.

INTRODUCTION

This plan has been briefed to avoid excessive duplication with information required in the Environmental Impact Statement. Part II should be reviewed for additional information on this project.

PLANNED MEASURES

This plan provides for the installation of land treatment measures, the installation of 43 structures for water control, 18.7 miles of channel work, and three grade stabilization structures. The land treatment measures and structural measures will be installed during a 5-year installation period.

It has been agreed by the soil and water conservation districts, community leaders, landowners, and state and federal agencies that adequate land treatment should be applied to 14,500 acres of cropland, 1,000 acres of pastureland, 1,070 acres of forest land, and 370 acres of other land, during the 5-year installation period (Table 1).

Technical assistance will be provided to plan land use changes, install needed conservation measures, manage watershed resources, and maintain conservation measures. Assistance will be given to planning and zoning boards, community leaders, and land developers in the proper use, treatment, and development of resources. General technical assistance will also be provided for environmental education and stimulation of landowners to participate in good land management practices.

The channel work is classified as open channels. At the time of project construction these channels are designed to carry the 10-year frequency storm during the growing season. Due to muck subsidence the channel capacity will be reduced from the 10-year to the 8-year frequency event by the end of the project life (25 years). Construction of the 18.7 miles of open channels will follow the present alignments of existing manmade ditches. Their capacity will be increased by excavation of the bottom of the ditch and from one side.

The grade stabilization structures will be box inlet drop spillways. These structures are designed for grade control for stabilizing the channels. Their emplacement will utilize the "island method" of installation wherein water excess to the drop inlet spillway capacity will be routed through earth emergency spillways. The grade stabilization structure locations are shown on the project map.

Approximately 43 structures for water control will be required for the project including several existing structures which require modification. The structures will be located onfarm, adjacent to maintained travelways along the proposed channels. Each structure

for water control will be designed to collect onfarm runoff and discharge by gravity through an outlet pipe. The recommended and most acceptable structure is one designed which will function by gravity; but, at the option of the operator, will allow the installation of a pump for water level control with only minor modifications. There are several other structural designs that are adequate that may be chosen during final design provided the overall performance of the measures or environmental impacts are not affected.

Channel work will require the acquisition of approximately 238 acres of land. Landrights will be acquired by fee simple title or permanent easement. Present land use is 65 acres of existing channel areas and travelways, 153 acres of cropland, 7 acres of grassland, and 13 acres of forest land. Future land use of this area will be for channels and travelways for channel maintenance. Public use will be restricted by gates.

Each contract will require that contractors adhere to strict specifications for minimizing soil erosion, water, noise, and air pollution during construction. The specifications will include provisions for measures, such as sediment basins and temporary vegetation and mulching, to protect exposed areas until permanent vegetation is established. Adherence to state and local health requirements will be required regarding disease vector control, noise, and air pollution. Suppressors will be used to keep dust within tolerable limits. Pollution of surface areas or ground water by chemicals, fuel, lubricants, sewage, and other pollutants will not be permitted. Clearing and disposal of brush and vegetation will be carried out in accordance with applicable state and local laws. A barrier (i.e. plastic filter cloth) will be installed at the downstream end of the channel work when necessary to minimize the chances of sediment from reaching the downstream fishery during excavation.

Requirements for safety and health, in conformance with the Federal Construction Safety Act of 1969 (P.L. 91-54), will be included in each construction contract. Design and construction will comply with applicable state laws.

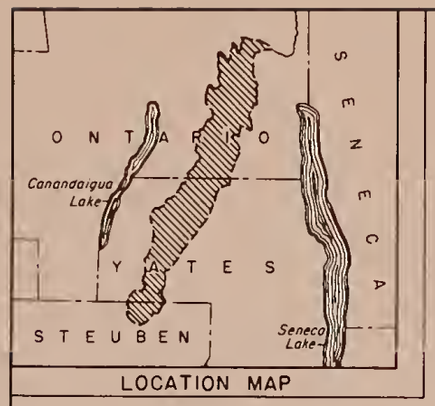
The plan has been coordinated with the Division of Historic Preservation, New York State Parks and Recreation. Investigations to date indicate that the project will not encroach on any historic place or any places planned for historic preservation. If artifacts or other items of archeological or historic significance are uncovered by SCS, or brought to its attention by others prior to or during construction, the State Commissioner of Parks and Recreation and the National Park Service will be notified. Construction will not begin or continue until appropriate arrangements for survey or salvage have been made.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Project Map

FLINT CREEK WATERSHED

ONTARIO, STEUBEN AND YATES COUNTIES, NEW YORK



LOCATION MAP

LEGEND

- Hard surface, medium duty road
- Improved light duty road
- Unimproved dirt road
- Railroad
- Stream
- County line
- Town line
- Watershed project boundary
- Area benefited

PROJECT MEASURES

- Grade Stabilization Structure
- Channel work
- 99+80 Stationing

HOPEWELL
PHELPS
SENECA
GORHAM
MIDDLESEX
POTTER
JERUSALEM
ITALY
BENTON
Phelps
Piersons Corners
Seneca Castle
Flint
Stanley
Garham
Potter
Friend
PRATTSBURG
YATES CO.
STEUBEN CO.
ONTARIO CO.
LATERAL-13
LATERAL-11
LATERAL-10A
LATERAL-10B
LATERAL-9
565+00
724+40
100+00
351+60
77°06'
42°55'
42°35'
77°15'
Scale 1:31,680
0 2 3 Miles

UPPER FIVE MILE CREEK WATERSHED

REVISED JANUARY 1975
USDA-SCS-HYATTSVILLE, MD 1975

INSTALLATION COST - MONETARY

The total installation cost of the works of improvement is estimated to be $2,346,700. Of this total, $1,699,400 will be paid by Public Law 566 funds and $647,300 by other funds. Total installation cost includes $678,000 for establishing land treatment measures on private land and $1,668,700 for structural measures. Table 1 contains further cost information.

Land treatment costs include P.L. 566 funds of $160,700 to be used by Soil Conservation Service and Forest Service, to provide accelerated technical assistance; regular SCS program funds of $22,900 and current cooperative federal-state forestry program funds of $6,800 for technical assistance to continue the going program; and costs of $487,600 for applying land treatment. Landowners and operators will apply land treatment with cost sharing assistance that may be available through local, state, or federal programs at the time of installation. See Table A for land treatment installation by landowners and operators.

TABLE A - SCHEDULE OF OBLIGATIONS - LAND TREATMENT

(Dollars) 1/

Year	Public Law 566 Funds	Other Funds	Total
1	40,700	100,000	140,700
2	30,000	100,000	130,000
3	30,000	100,000	130,000
4	30,000	100,000	130,000
5	30,000	117,300	147,300
TOTAL	160,700	517,300	678,000

1/ Price base: 1976

The total installation costs of structural measures includes costs for construction, engineering services, landrights, and project administration.

Construction costs include estimated contract costs plus a contingency allowance of 12 percent. All costs are based on estimated quantities and current (1975) unit costs. The unit costs were obtained from actual bid prices for similar works constructed in the state and from costs submitted by material supply firms. Construction costs include such items as excavation, seeding, concrete, and culverts. The estimated construction cost is $1,085,800 for the open channels including $39,500 for about 43 structures for water control, and $130,800 for the grade stabilization structures. Construction costs will be paid by P.L. 566 funds.

Engineering services costs include the direct cost of engineers and other technicians for surveys, engineering and geologic investigations, design and preparation of plans and specifications for structural measures, including associated vegetative work. The costs for engineering services are estimated at $156,300. These costs will be paid by P.L. 566 funds.

Relocation payments include moving and related expenses for a displaced person, business, or farm operation; as well as, financial assistance for replacement housing for a displaced person who qualifies and whose dwelling is acquired because of the project. No relocations are anticipated; however, in the event they should occur, the cost sharing of relocation payments will be based on the ratio of P.L. 566 and other funds, minus relocation payments, to the total project cost.

Project administration costs include the costs incurred for layout, inspection, relocation assistance advisory services (when relocation occurs), administration of contracts, and other administrative and clerical services necessary to install the project. The Sponsoring Local Organization will bear the costs it incurs to administer construction contracts and for such inspection and other administrative services, as it requires, for installation of the project. The Service will bear the costs it incurs for layout, inspection, and for such other administrative, clerical, and other services it provides. The Service may not use P.L. 566 funds to assist the Sponsors to provide relocation assistance advisory services. Project administration costs are estimated to be $200,200. The Service and the Sponsors will each bear the costs of project administration it provides, estimated to be $165,800 and $34,400 respectively.

Landrights costs were estimated to be $95,600 and include all expenditures to be made in acquiring land, replacing culverts and bridges, and constructing access roads. These costs include $24,000 for bridges and $71,600 for survey, legal fees, land, and other costs. Landrights costs were determined with the cooperation of the local Sponsors and will be paid entirely from other funds.

The cost for each major structural measure has been determined individually as shown in Table 2. The schedule of obligations for structural measures is shown on Table B.

TABLE B - SCHEDULE OF OBLIGATIONS - STRUCTURAL MEASURES
1/
(Dollars)

Fiscal Year	Measures	P.L. 566 Funds	Other Funds	Total
First	Engineering Services	46,000		46,000
	Landrights		38,000	38,000
	Project Administration	34,800	11,000	45,800
First Year Totals		80,800	49,000	129,800
Second	Engineering Services	46,000		46,000
	Landrights		57,600	57,600
	Project Administration	33,000	6,000	39,000
	Structural Measures	356,000		356,000
Second Year Totals		435,000	63,600	498,600
Third	Engineering Services	46,000		46,000
	Project Administration	33,000	6,000	39,000
	Structural Measures	356,000		356,000
Third Year Totals		435,000	6,000	441,000
Fourth	Engineering Services	11,100		11,100
	Project Administration	33,000	6,000	39,000
	Structural Measures	356,000		356,000
Fourth Year Totals		400,100	6,000	406,100
Fifth	Engineering Services	7,200		7,200
	Project Administration	32,000	5,400	37,400
	Structural Measures	148,600		148,600
Fifth Year Totals		187,800	5,400	193,200
Totals		1,538,700	130,000	1,668,700

1/ Price base: 1976

BENEFITS - MONETARY

Average annual flood damage reduction benefits are estimated at $155,200 (Table 5). Agricultural floodwater damages will be reduced by $120,400, erosion and sediment damages by $22,800, and indirect flood damages by $12,000.

Total structural measure benefits are $249,200, including flood damage reduction benefits of $147,300 and secondary benefits of $101,900 (Table 6). Secondary benefits from a national viewpoint were not considered pertinent to the economic evaluation.

The installation of planned land treatment measures will provide flood damage reduction benefits, amounting to $7,900 annually, which were not used for project justification.

COMPARISON OF BENEFITS AND COSTS

The average annual cost of the structural measures is estimated to be $139,000. These measures are expected to produce average annual benefits, excluding secondary benefits, of $147,300 or $1.06 for each dollar of cost. The ratio of the total average annual project benefits ($249,200) to the average annual cost of structural measures ($139,000) is 1.8 to 1.0. Table 6 shows a summary of benefits, costs, and the benefit to cost ratio.

INSTALLATION PROVISIONS

The Yates County Soil and Water Conservation District will petition the Yates County Board of Supervisors, and the Ontario County Soil and Water Conservation District will petition the Ontario County Board of Supervisors to establish a small watershed protection district, in accordance with New York State's enabling legislation (Article 5-D of the County Law). Upon approval by the county governments, the Flint Creek Small Watershed Protection District will have legal authority and will:

1. Provide the necessary landrights for all structural measures. They will obtain landrights through condemnation, if necessary. Appraisals will be obtained as a prerequisite to securing landrights in accordance with provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646, 84 Stat. 1894).

2. Provide for the administration of construction contracts and for such inspection and other administrative services as it requires for installation of the project. The Sponsors, at a later date, may request the Soil Conservation Service to administer contracts.

3. Request the assistance of the Cooperative Extension Service, through their agents and specialists, in developing and carrying out the watershed information and education program.

4. Request the cooperation of lending agencies, such as local banks, the Farmers Home Administration, the Production Credit Association, and the Federal Land Bank, to provide loans to help cooperating landowners and operators install needed treatment measures.

5. Provide relocation assistance advisory services, when necessary, to include providing current and continuing information on the availability, prices, and rentals, of comparable decent, safe, and sanitary sales and rental housing; supply information concerning federal and state housing programs, disaster loan programs, and other federal or state programs offering assistance to displaced persons; and provide other advisory services to displaced persons in order to minimize hardships to such persons in adjusting to relocation. These services will be provided without P.L. 566 cost sharing assistance.

6. As a part of project administration, provide personally or by certified or registered first class mail, written notice of displacement, at least 90 days before displaced persons have to move, and appropriate application forms to each individual, family, business or farm operation to be displaced; assist in filing applications, review and take action on applications for relocation assistance; review and process grievances in connection with displacements; and make relocation payments. The Service will assist in fulfilling these responsibilities.

The Yates, Ontario, and Steuben County Soil and Water Conservation Districts will be responsible for providing assistance to landowners and operators to help them plan, establish, and maintain land treatment measures. The land treatment measures will be installed at approximately uniform annual rates over the 5-year installation period. Installation of similar measures required to meet the total conservation needs will be continued thereafter.

The Soil Conservation Service will:

1. Under the Yates, Ontario, and Steuben Soil and Water Conservation Districts' Memorandums of Understanding with the U.S. Department of Agriculture, provide technical assistance for planning, installing, and maintaining conservation measures.

2. Furnish engineering services for the surveys, layouts, design, and preparation of plans and specifications for the structural measures.

3. Provide for project administration services, including a government representative to administer the expenditure of federal funds, and ensure that all structural measures are installed in accordance with plans and specifications.

The Forest Service will:

Provide guidance and direction to the New York State Department of Environmental Conservation, Division of Lands and Forests, for implementation of the planned forestry treatment.

The New York State Department of Environmental Conservation, Division of Lands and Forests will:

In cooperation with the Forest Service, furnish technical assistance to landowners and others for the determination of needed practices and installation of forest treatment measures.

OPERATION AND MAINTENANCE PROVISIONS

LAND TREATMENT MEASURES

Land treatment measures will be operated and maintained by the landowners and operators. Technical assistance will be provided by the Steuben County Soil and Water Conservation District, the Yates County Soil and Water Conservation District, and the Ontario County Soil and Water Conservation District, and the New York State Department of Environmental Conservation (Division of Lands and Forests), subject to availability of resources.

STRUCTURAL MEASURES

Annual operation and maintenance cost for the structural measures is estimated to be $10,000. This cost will be borne by the Flint Creek Small Watershed Protection District by taxing of the beneficiaries. Operation and maintenance will be performed by the district to maintain the capacity and channel dimensions as shown in Table 3A. Maintenance activities may include, but not necessarily be limited to, the following:

1. Reseed significant areas of poor stand or areas destroyed by erosion. If necessary, restore areas of erosion before reseeding.

2. Fertilize vegetation as required to maintain a vigorous growth.

3. Mow grass at regular intervals to maintain optimum cover.

4. Remove silt bars and properly dispose of them outside the channel perimeter.

5. Remove and properly dispose of debris. Give special attention to removal and proper disposal of debris at structures.

6. Keep access roads for maintenance in good condition.

7. Rehabilitate damaged pipe inlets from fields or side channels. Replace eroded soil adjacent to structures.

The Sponsors and the Soil Conservation Service will make a joint inspection annually, after unusually severe floods, and after the occurrence of any other unusual conditions that might adversely affect the structural measures. They will jointly determine what maintenance measures are needed. These inspections will continue for three years

following installation of the structures. Inspection after the third year will be made annually by the Sponsors. They will prepare a report and send a copy to the Service.

An establishment period of three years is provided for all structural works of improvement and associated vegetative cover. During this period the Soil Conservation Service may use P.L. 566 funds to cost share on any repairs or other work resulting from unknown conditions. or deficiencies. Such cost will be shared in the same ratio as for the original structural measures.

Repairs or additional work not eligible for P.L. 566 financial assistance include maintenance work and work resulting from improper operation and maintenance. However, the Soil Conservation Service will provide technical assistance that may be needed in performing any of these tasks.

An operation and maintenance agreement between the Soil Conservation Service and the Watershed Protection District will be executed for all structures prior to the signing of a project agreement. It will include specific provisions for retention and disposal of property acquired or improved with P.L. 566 financial assistance. The operation and maintenance agreement will contain a reference to the State of New York Watersheds Operation and Maintenance Handbook. An operation and maintenance plan will be prepared for each structure in accordance with guidelines contained in the handbook.

FINANCING PROJECT INSTALLATION

Federal assistance, financial and other, to be furnished by the Soil Conservation Service in carrying out the project, is contingent on the appropriation of funds for this purpose. Before federal funds are made available, the Sponsoring Local Organization will:

1. Give assurances that all necessary landrights have been secured.
2. Provide for administering the contracts.
3. Execute a project agreement.

Technical assistance funds for forestry activities will be provided through P.L. 566 and the going cooperative programs of the Forest Service.

The Yates County, the Steuben County, and Ontario County Agricultural Stabilization and Conservation Committees will provide cost sharing assistance to farmers in the watershed for installation of land treatment measures in accordance with provisions of the program in effect at the time assistance is provided.

The Farmers Home Administration will give special consideration to eligible farm families in the way of credit and farm management guidance to establish the necessary land treatment measures and improve farm income. This assistance may vary over the years as the regulations pertaining to Farmers Home Administration loan programs are altered to meet changing conditions.

A preliminary application has been filed by the Sponsors for a P.L. 566 loan, administered by the Farmers Home Administration, for the costs of the landrights (about 238 acres) and project administration. The estimated amount of this loan is about $100,000. The watershed protection district will have the authority to tax landowners in proportion to benefits received. The district will use this authority to repay the loan obtained from the Farmers Home Administration.

The Yates County Board of Supervisors and the Ontario County Board of Supervisors will provide for expenses incurred in the formation of the Flint Creek Small Watershed Protection District. The Flint Creek Small Watershed Protection District will bear the landrights costs associated with the installation of the structural measures. Funds for these establishment expenses and landrights costs will be provided through procedures prescribed in New York State's enabling legislation (County Law). Under provisions of County Law, up to 50 percent of the costs of landrights needed for flood prevention may be reimbursable through New York State funding.

Prior to entering into agreements that obligate funds of the Service, the Flint Creek Small Watershed Protection District will have a financial management system for control, accountability, and disclosure of P.L. 566 funds received, and for control and accountability for property and other assets purchased with P.L. 566 funds. Program income earned during the grant period will be reported on the Sponsors request for advance or reimbursement from the Service.

TABLE 1 - ESTIMATED PROJECT INSTALLATION COST

Flint Creek Watershed, New York

Installation Cost Item	Unit	Number	Estimated Cost (Dollars) 1/ P. L. 566 Funds SCS 3/	FS 3/	Total	Other Funds SCS 3/	FS 3/	Total	TOTAL
LAND TREATMENT 2/									
Land Areas									
Cropland (Muckland)	Acres	800				134,000		134,000	134,000
Cropland (Upland)	Acres	13,700				237,500		237,500	237,500
Pastureland	Acres	1,000				62,500		62,500	62,500
Forest Land	Acres	1,070					41,400	41,400	41,400
Other Land	Acres	370				12,200		12,200	12,200
Technical Assistance			129,900	30,800	160,700	22,900	6,800	29,700	190,400
TOTAL LAND TREATMENT			129,900	30,800	160,700	469,100	48,200	517,300	678,000
STRUCTURAL MEASURES									
Construction									
Channel Work (M) 4/									
Open Channels	Miles	18.7	1,085,800		1,085,800				1,085,800
Grade Stabilization Structures	Each	3	130,800		130,800				130,800
Subtotal - Construction			1,216,600		1,216,600				1,216,600
Engineering Services			156,300		156,300				156,300
Project Administration									
Construction Inspection			82,900		82,900	6,900		6,900	89,800
Other			82,900		82,900	27,500		27,500	110,400
Subtotal - Administration			165,800		165,800	34,400		34,400	200,200
Other Costs									
Land Rights						95,600		95,600	95,600
Subtotal - Other						95,600		95,600	95,600
TOTAL STRUCTURAL MEASURES			1,538,700		1,538,700	130,000		130,000	1,668,700
TOTAL PROJECT			1,668,600	30,800	1,699,400	599,100	48,200	647,300	2,346,700

1/ Price base 1976.
2/ Includes only areas estimated to be adequately treated during the project installation period. Treatment will be accelerated throughout the watershed, and dollar amounts apply to total land areas, not just to adequately treated areas.
3/ Federal agency responsible for assisting in installation of works of improvement.
4/ Type of channel prior to project: (N) - an unmodified, well-defined natural channel or stream; (M) - manmade ditch or previously modified channel; (0) - none or practically no defined channel.

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TABLE 1A - STATUS OF WATERSHED WORKS OF IMPROVEMENT

Flint Creek Watershed, New York

Measures	Unit	Applied to Date	Total Cost (Dollars)
LAND TREATMENT - MUCK			
Conservation Cropping System	Acres	1,295	155,400
Crop Residue Management	Acres	500	1,250
Field Windbreak - Snow Fence	Feet	8,000	2,000
Irrigation System-Sprinkler	Number	3	18,000
Irrigation System-Subsurface	Number	1	8,000
Drainage Main or Laterals	Feet	302,690	181,614
Pumping Plant, Water Control	Number	2	5,000
Subsurface Drain	Feet	200,000	120,000
Critical Area Planting	Acres	30	7,500
Clearing and Snagging	Feet	5,000	10,000
LAND TREATMENT - UPLAND			
Brush Management	Acres	578	8,670
Clearing & Snagging	Feet	11,950	23,900
Conservation Cropping System	Acres	84,404	10,128,480
Contour Farming	Acres	25,759	515,180
Critical Area Planting	Acres	800	200,000
Crop Residue Management	Acres	21,000	63,000
Diversion	Feet	62,200	34,210
Pond	Number	213	255,600
Field Border	Feet	7,200	14,400
Fishpond Management	Number	70	1,400
Grassed Waterway or Outlet	Acres	56	33,600
Hedgerow Planting	Feet	5,706	11,412
Irrigation Storage Reservoir	Acre/Feet	20	25,000
Irrigation System Sprinkler	Acres	110	24,000
Irrigation Water Management	Acres	210	10,000
Land Smoothing	Acres	10	3,000
Livestock Exclusion	Acres	648	103,680
Minimum Tillage	Acres	3,900	390,000
Drainage Main or Lateral	Feet	802,010	481,206
Mulching	Acres	120	24,000
Pasture & Hayland Mgt.	Acres	10,550	263,750
Pasture & Hayland Planting	Acres	10,110	505,500
Pipeline	Feet	1,100	600
Recreation Area Improvement	Acres	117	4,680
Recreation Land Grading & Shaping	Acres	5	2,500
Spring Development	Number	4	2,000
Streambank Protection	Feet	1,000	2,000
Stream Channel Stabilization	Feet	1,000	10,000
Stripcropping	Acres	10,800	108,000
Drainage Field Ditch	Feet	31,000	7,750
Subsurface Drain	Feet	3,911,376	2,597,963
Tree Planting	Acres	1,044	37,200
Well	Number	42	8,400
Wildlife Wetland Habitat Management	Acres	395	197,500
Wildlife Upland Habitat Management	Acres	2,167	108,350
Wildlife Watering Facility	Number	51	25,500
Hydrologic Cultural Operations	Acres	125	3,600
Fire Control	Acres	13,921	3,600
TOTAL			16,748,395

TABLE 2 - ESTIMATED STRUCTURAL COST DISTRIBUTION

Flint Creek Watershed, New York

(Dollars) [1]

Item	Type of Channel	Installation Cost P.L. 566 Funds			Installation Cost - Other		Total Installation Cost
		Construction	Engineering	Total P.L. 566	Land Rights	Total Other	
Open Channels							
Flint Creek 9.1 miles	M [6]	845,600	93,000	938,600	50,000 [2]	50,000	988,600
Nettle Valley 1.6 miles	M	70,900	12,800	83,700	6,500 [3]	6,500	90,200
Laterals 8.0 miles	M	169,300	27,100	196,400	39,100 [4]	39,100	235,500
Grade Stabilization							
Structure 1		26,400	4,700	31,100	-		31,100
Structure 2		78,000	14,000	92,000	-		92,000
Structure 3		26,400	4,700	31,100	-		31,100
Subtotal		1,216,600	156,300	1,372,900	95,600	95,600	1,468,500
Project Administration				165,800		34,400 [5]	200,200
GRAND TOTAL				1,538,700		130,000	1,668,700

1/ Price Base 1976.
2/ Includes $12,000 for bridges.
3/ Includes $2,000 for bridges.
4/ Includes $10,000 for bridges.
5/ Includes cost of formation of small watershed protection district which includes legal fees of $10,000.
6/ "M" is a type of channel that is manmade or previously modified.

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TABLE 3A- STRUCTURE DATA

CHANNELS

Flint Creek Watershed, New York

Channel	Station	Drainage Area (sq.mi.)	Capacity Required (cfs) 5/	Water Surface Elevation 5/	Hydraulic Gradient (ft./ft.)	Channel Dimens. Bottom (ft.)	Channel Dimens. Depth (ft.) 5/	Side Slopes	Velocities Aged N=0.030	Velocities As Built n=0.024	Excavation (1,000 cu.yd.) 1/	Type of Work 2/	Before Project Type of Channel 3/	Before Project Flow Condition 4/
Main (Flint Creek)														
"	100+00	32.0	550	884.0	0.001600	24	4.0	2:1	4.3	5.2		II	M (1950)	Pr.
"	176+00	43.8	820	880.3	0.000487	20	7.5	2:1	2.1	2.5		II	M (1950)	Pr.
"	215+00		820	879.3	0.000256	28	8.0	2:1	2.3	2.8		II	M (1950)	Pr.
"	230+30		820	878.9	0.000261	24	8.3	2:1	2.4	2.9		II	M (1950)	Pr.
"	265+00		820	878.1	0.000231	24	8.7	2:1	2.3	2.8		II	M (1950)	Pr.
"	279+00	49.0	870	877.9	0.000143	30	8.7	2:1	2.1	2.5		II	M (1950)	Pr.
"	290+00		870	877.7	0.000182	30	8.8	2:1	2.1	2.5		II	M (1950)	Pr.
"	309+00		870	877.1	0.000316	20	8.6	2:1	2.8	3.4		II	M (1950)	Pr.
"	353+00		870	875.7	0.000318	20	8.1	2:1	3.0	3.6		II	M (1950)	Pr.
"	367+00	52.0	910	875.2	0.000357	24	8.0	2:1	2.8	3.4		II	M (1950)	Pr.
"	375+00		910	874.9	0.000375	30	7.8	2:1	2.6	3.1		II	M (1950)	Pr.
"	400+00		910	874.2	0.000280	30	7.6	2:1	2.7	3.2		II	M (1950)	Pr.
"	470+00	52.5	940	872.6	0.000229	36	7.3	2:1	2.9	3.5		II	M (1950)	Pr.
"	500+00		940	871.8	0.000267	40	7.1	2:1	2.4	2.9		II	M (1950)	Pr.
"	514+70		940	871.2	0.000408	30	6.7	2:1	3.4	4.1		II	M (1950)	Pr.
"	519+00	55.0	980	871.0	0.000465	30	6.5	1:1	3.5	4.2		II	M (1950)	Pr.
"	554+00		980	868.7	0.000657	36	5.5	1:1	3.8	4.6		II	M (1950)	Pr.
"	565+00	57.6	1050	868.0	0.000636	45	5.3	2:1	3.6	4.3	507.1	II	M (1950)	Pr.
Nettle Valley (1.6 mi.)	174+60	9.0	280	882.7	0.000413	10	5.7	2:1	2.3	2.3	68.4	II	M (1950)	Pr.
Laterals														
#9 (Length 10,770 ft.)	0+00	2.2	126	879.6	0.0001	13	5.0	2:1	1.1	1.1	20.3	II	M (1950)	I
#10A (Length 6,400 ft.)	0+00	1.4	64	877.9	0.00	5	5.9	2:1	0.6	0.6	22.2	II	M (1950)	I
#10B (Length 9,000 ft.)	0+00	0.7	60	878.4	0.00	5	6.0	2:1	0.6	0.6	30.6	II	M (1950)	I
#11 (Length 6,210 ft.)	0+00	1.6	84	876.0	0.00	5	5.0	2:1	1.1	1.1	11.6	II	M (1950)	I
#13 (Length 10,630 ft.)	0+00	1.8	115	872.2	0.00	5	5.9	2:1	1.2	1.2	52.0	II	M (1950)	I

1/ In addition to earth excavation shown, there is about 23,050 cubic yards of rock excavation from Sta. 519+00 to 554+00.
2/ II - Enlargement or realignment of existing channel or stream.
3/ M = Manmade or previously modified channel. Channel construction commenced in 1950. Emergency cleanout performed in 1973 after Hurricane Agnes.
4/ Pr. = Perennial - flows at all times except extreme drought. I = Intermittent = continuous flow through some seasons of the year, but little or no flow through other seasons.
5/ Design capacity, and depth at the end of the project life (25 years).

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TABLE 3B - STRUCTURAL DATA

GRADE STABILIZATION STRUCTURES

Flint Creek Watershed, New York

Station, No., & Stream	Drainage Area (sq. mi.)	Design Capacity (cfs)	Frequency of Design Capacity (Years)	Drop (Feet)	Type of Structure
91 + 20 No. 1 Nettle	7.2	Bankfull	2-50	6	Island Type Box Inlet Drop Spillway
100 + 00 No. 2 Flint	32.0	Bankfull	2-50	5	Island Type Box Inlet Drop Spillway
174 + 60 No. 3 Nettle	9.0	Bankfull	2-50	6	Island Type Box Inlet Drop Spillway

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TABLE 4 - ANNUAL COST

Flint Creek Watershed, New York
1/
(Dollars)

Evaluation Unit	Amortization of Installation Cost 2/	Operation and Maintenance Cost	Total
All Structural Measures	113,500	10,000	123,500
Project Administration	15,500	. . . . .	15,500
GRAND TOTAL	129,000	10,000	139,000

1/ Price Base: 1976.
2/ 25 years @ 5 7/8 percent interest

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TABLE 5 - ESTIMATED AVERAGE ANNUAL FLOOD DAMAGE REDUCTION BENEFITS

Flint Creek Watershed, New York

(Dollars) 1/

Item	Estimated Average Annual Damage		Damage Reduction Benefit
	Without Project	With Project	
Floodwater			
Crop and Pasture	149,600	39,800	109,800
Other Agricultural	14,400	3,800	10,600
Subtotal	164,000	43,600	120,400
Erosion and Sediment			
Subsidence	24,300	14,600	9,700
Channel Cleanout	13,100	0 2/	13,100
Subtotal	37,400	14,600	22,800
Indirect	16,400	4,360	12,000
Total	217,800	62,560	155,200

1/ Price base current normalized November 1974.
2/ Future maintenance cost of channels is reflected as an Operation and Maintenance cost in Table 4.

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TABLE 6 - COMPARISON OF BENEFITS AND COSTS FOR STRUCTURAL MEASURES

Flint Creek Watershed, New York

(Dollars)

Evaluation Unit	Average Annual Benefits 1/			Average Annual Cost 3/	Benefit Cost Ratio
	Damage 2/ Reduction	Secondary	Total		
All Structural Measures	147,300	101,900	249,200	123,500	2.1:1.0
Project Administration				15,500	
GRAND TOTAL	147,300	101,900	249,200	139,000	1.8:1.0

1/ Price base current normalized 1976.
2/ In addition, it is estimated that land treatment measures will provide floodwater damage reduction benefits of $4,800 and sediment damage reduction benefits of $3,100 annually.
3/ From Table 4.

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PRINCIPLES AND STANDARDS PHASE-IN ADDENDUM

FLINT CREEK WATERSHED

Ontario, Yates, and Steuben Counties, New York

INTRODUCTION

This addendum was developed in accordance with phase-in procedures adopted by the Water Resources Council for implementation of the Principles and Standards for Level C plans for which field studies, analyses, and evaluations were completed as of October 25, 1973, and which have been formulated in accordance with Senate Document 97 as supplemented and amended, and which are to be transmitted to the OMB before June 30, 1976.

INTEREST RATE

Using an interest rate of 6 1/8 percent, 1976 prices for installation costs, and current normalized prices for benefits and operation and maintenance costs, average annual costs of the project are $142,100, average annual primary benefits are $147,300, and average annual secondary benefits are $119,100. The B:C ratio excluding secondary benefits is 1.03:1.0, while inclusion of these benefits provides a 1.59:1.0 B:C ratio.

THE ABBREVIATED ENVIRONMENTAL QUALITY PLAN

ENVIRONMENTAL CONCERNS

The major environmental concerns are:

1. Natural Beauty
2. Quality of water, land and air resources
3. Biological resources and ecological systems
4. Geological, archeological, and historical resources

Investigations conducted by Peter P. Pratt, State University of New York at Oswego, and Marjorie K. Pratt, Ithaca College, indicates that there are no historical or archeological materials in the muckland area of the watershed. At the time of the survey (October 1974) two dam sites in the upper watershed were included in the tentative plan. Dr. Pratt's survey of these two areas revealed the possibility of several archeological sites worthy of consideration. Final forumlation of the plan did not include these two dam sites, therefore these archeological sites will not be affected by this project.

The National Register of Historic Places lists no properties in the watershed such as historic districts, sites, buildings, structures, or objects which are significant in American history, architecture, archeology or culture.

The New York State Office of Parks and Recreation, Division for Historic Preservation reports that the project will not affect buildings or structures of historic merit. There are no unique scenic areas within the watershed.

Approximately 13,279 acres of sloping cropland are subject to soil erosion. The average annual soil loss on these lands is about 11 tons per acre. Monoculture, vegetable or corn silage, farming is practiced on much of this land, resulting in water and nutrient losses needed for optimum yields.

There are about six acres of soils in capability subclass VIIs and 18 of VIIIs pastureland that should have adjustments in land use. The steepness of slopes and/or the rocky conditions limit the application of management practices and productivity.

Presently about 67 percent of the watershed (43,460 acres) does not have conservation treatment planned.

Approximately 4,500 acres of soils in capability subclass IIIw and 601 acres of IVw cropland need drainage or other water management measures to improve yields and increase efficiency of use. See Soil Conservation Service's National Engineering Handbook, Section 2 for applicable engineering conservation practices.

Sediment, the soil and rock particles resulting from erosion, accumulates in the Flint Creek channel in the amount of approximately 1,700 cubic yards per mile per year. This sediment deposition reduces channel capacity, thereby increasing flooding potential. Sediment deposition in the channel is particularly evident where gravel bars have developed at the mouth of tributaries entering the channel.

Average annual sediment discharge at the mouth of the watershed is approximately 25,875 tons per year. This is equivalent to a sediment concentration of 235 milligrams per liter. Sediment damages related to sediment discharges were not evaluated.

Wind erosion occurs on the muck where proper land treatment measures have not been applied to provide adequate protection. Individual soil particles strike young plants and cut off tender stalks and leaves. Windblown particles deposited on the leeward side of fixed objects smother plants. Fertilizers and pesticides, attached to or absorbed by soil particles, are lost by wind erosion. Soil losses due to wind erosion are estimated at between 1/4 to 1/2 inch annually on fields that are not adequately protected.

Sediment deposition in the muckland laterals is almost entirely the result of wind erosion. Growers have found that frequency of cleanout of these laterals is dependent on the duration and intensity of the wind during periods when the muck is dry and not protected by vegetative cover. Deposition in the laterals is estimated to be 244 cubic yards per mile per year.

Improper forest management and harvesting operations are damaging watershed conditions on 1,070 acres. Lack of adequate canopy or ground cover in woodland grazing, poor stand composition, unprotected skid trails, and logging roads are contributing to soil erosion, inadequate infiltration rates, and uneconomical operations.

Intensive upland agriculture in the watershed has brought about the elimination of many hedgerows which provide wildlife cover. This trend toward clean farming will continue to reduce terrestrial small game populations.

OBJECTIVES

The following objectives of the environmental quality plan are to enhance the quality aspects of water, land, and air by control of pollution, prevention of erosion, and restoration of eroded areas in order to harmonize land use objectives in terms of productivity for economic use and development with conservation of the resources.

1. Provide watershed protection to:

    a. Reduce erosion rates of up to 11.0 tons per acre on 13,279 acres of upland cropland to less than 3.0 tons per acre.

    b. Reduce gross sheet erosion on the remaining upland cropland.

    c. Reduce average annual sediment loss to the mouth of the watershed by 40 percent.

    d. Reduce wind erosion on the muckland by 50 percent.

    e. Reduce fertilizer and agricultural chemical losses resulting from erosion.

    f. Improve water quality through the reduction of stream sediment load.

2. Enhance or maintain existing quality and quantity of fish and wildlife habitat by:

    a. Providing field borders and windbreaks.

    b. Providing fishpond management.

    c. Providing upland and wetland habitat management.

    d. Planting trees to speed up successional changes.

    e. Maintaining a diversity of habitat.

3. Protect, enhance, and enjoy archeological, historical, scientific and scenic resources by:

    a. Identifying valuable resources through field survey and research.

    b. Preserving areas of natural scenic beauty.

    c. Planting trees on open land formerly cropped.

    d. Developing trails and walkways.

COORDINATION

A number of coordination meetings involving representatives from the U. S. Fish and Wildlife Service, the New York State Department of Environmental Conservation, the Soil Conservation Service, the Sponsoring Local Organizations, and interested persons were held during project formulation to assess potential environmental issues.

Articles concerning Flint Creek Watershed problems have appeared in such news media as the "Canandaigua Daily Messenger" the "Rochester Democrat and Chronicle" and the Soil and Water Conservation District Newsletters". A four page pamphlet, distributed by the Yates, Ontario, and Steuben Counties Soil and Water Conservation District Boards of Supervisors, describes problems, potential remedial measures, costs, and benefits for the Flint Creek project.

Several alternatives were evaluated during planning in order to determine a feasible plan acceptable to the Sponsors. Representatives of the Soil Conservation Service presented physical and economic data relative to these alternatives to the Sponsors and other interested agencies, groups, and individuals as they were developed.

The planning of this watershed has been coordinated with the New York State Office of Parks and Recreation regarding historical and archeological investigations. The New York State Museum and Science Service recommended that an investigation of specific areas to be disturbed be made by an archeologist prior to completion of the work plan. This survey was completed in November 1974. Personnel of the U. S. Fish and Wildlife Service, U. S. Department of the Interior, and the New York State Department of Environmental Conservation have made several reconnaissances of the project area with Soil Conservation Service personnel to coordinate the fish and wildlife aspects of the project. The Environmental Protection Agency has provided an assessment of water quality, and advised Soil Conservation Service personnel during project formulation.

FORMULATION

A land treatment phase is recommended to provide technical assistance to review and make needed revisions of conservation and woodland plans; to maintain existing cover which is adequate; install essential land treatment measures; and to plan and apply land treatment measures applicable to land areas which require treatment.

The land treatment phase of the plan includes technical assistance and measure installation and applies to each acre in the watershed. The land treatment phase includes continuation of the ongoing technical assistance and measure installation at a rate in existence prior to the formulation of this plan and accelerated technical assistance and measure installation required to meet project objectives. Technical assistance, going and accelerated, will be used to review, revise and update existing conservation and woodland plans, to develop new plans where needed, for soil surveys, resource inventories and for installation of measures. Technical assistance will thus be applicable to any acre in the watershed. Measure installation will be on those acres which require treatment for adequate protection and for changes in use.

It has been agreed by the soil and water conservation districts, community leaders, landowners, and state and federal agencies that adequate land treatment should be applied to 14,500 acres of cropland to include conservation cropping system, field windbreaks, irrigation system (sprinkler), diversions, and stripcropping; 1,000 acres of pastureland to include pasture and hayland management and planting; and 1,070 acres of forest land to include tree planting, hydrologic stand improvement and woodland grazing control. Definitions for proposed land treatment measures are in Appendix E.

Wildlife habitat management practices should be interspersed throughout the watershed. These practices include planting grasses, legumes, and shrubs; mowing; maintaining a diversity of habitat; and managing valuable wildlife food plants.

The estimated cost for application of the land treatment phase would be about $487,600. Technical assistance costs for the land treatment phase would be about $190,400.

IMPLEMENTATION

The proposed Environmental Quality Plan could be implemented through P.L. 566 administered by the Soil Conservation Service. Authorities provided through this act could be used to supplement authorities of the county, state, and federal agencies.

The land treatment phase could be implemented through the Yates, Steuben, and Ontario County Soil and Water Conservation Districts. Technical assistance could be provided by local, state, and federal agencies through their going programs in accordance with their authorities and responsibilities. P.L. 566 funds might be used by the Soil Conservation Service and the Forest Service to provide accelerated technical assistance. The landowners and operators would finance the cost of installing measures on their land, utilizing their usual source of funds with cost sharing assistance available through going conservation programs.

EFFECTS AND IMPACTS

Implementation of the Environmental Quality Plan would cause the following impacts:

1. About 3 percent reduction of floodwater damage and about 24 percent reduction of sediment damages on 2,610 acres of muckland.

2. Income would be increased for about 10 muckland farm families, or about 35 people.

3. Total gross sheet erosion will be reduced from 191,548 tons to 92,521 tons annually, or about 52 percent.

4. Sheet erosion on the upland cropland will be reduced from 146,202 tons to 47,175 tons, or about 68 percent.

5. Wind erosion on the muck will be reduced about 50 percent.

6. Wind deposited sediment in the muck laterals will be reduced from about 244 cubic yards to 120 cubic yards per mile per year.

7. Annual quantities of sediment delivered to the mouth of the watershed will be reduced from 25,875 to 16,368 tons.

8. Sediment concentration at the mouth will be reduced from 235 mg/l to 149 mg/l.

9. Reduction of stream pollution from agri-nutrients and agri-chemicals adsorbed by sediment.

DISPLAY ACCOUNTS FOR THE SELECTED PLAN

A display of the beneficial and adverse effects for the selected plan are given in the following pages for:

National Economic Development

Environmental Quality

Regional Development

Social Well-Being

FLINT CREEK WATERSHED

SELECTED PLAN

NATIONAL ECONOMIC DEVELOPMENT 1/

Components	Measures of Effects	Components 2/	Measures of Effects
Beneficial effects:		Adverse effects:	
A. The value to users of increased outputs of goods and services		A. The value of resources required for a plan	
1. Flood prevention	$124,500 3/	1. Channel work	
2. Erosion and Sediment reduction	22,800	Project construction	$113,500
		Project administration	15,500
		O&M	10,000
Total beneficial effects	$147,300	Total adverse effects	$139,000
		Net beneficial effects	$ 8,300

1/ Average annual values based on 25 years @ 5-7/8 percent interest

2/ Does not include effects of the onsite land treatment measures included in this plan. The total average annual installation cost of land treatment is $52,400.

3/ In addition it is estimated that land treatment measures will provide floodwater damage reduction benefits of $4,800 and sediment damage reduction benefits of $3,100 annually.

FLINT CREEK WATERSHED

SELECTED PLAN

ENVIRONMENTAL QUALITY

Components	Measures of Effects
Beneficial and adverse effects:	
A. Quality consideration of land, water and air	1. Erosion rate on upland cropland will be limited to less than 3 tons/acre.
	2. Will reduce the delivery of nutrients and toxic agricultural wastes from the watershed.
	3. Average annual sediment concentrations at the mouth will be reduced from 235 mg/l to 149 mg/l
	4. Alleviation of flooding will reduce annual fertilizer applications by 22 tons and herbicide applications by 3,000 pounds.
	5. Runoff will be reduced by 4 percent.
	6. Floodwater damages will be reduced by about 73 percent.
	7. Wind erosion on the muck will be reduced by about 50 percent.

FLINT CREEK WATERSHED

SELECTED PLAN

ENVIRONMENTAL QUALITY

Components	Measures of Effects
B. Biological systems and ecological resources	1. Muskrat activity along about 18.7 miles of the channel will be temporarily disturbed during construction.
	2. Perennial weeds on the banks, and cattails and other emergent aquatics in the channel will be eliminated by channel modification. This vegetation will be replaced by seedings of perennial grasses and legumes.
	3. The carrying capacity of wildlife habitat will be increased through implementation of land treatment measures.
	4. A temporary reduction in fishing caused by increased turbidity during construction will occur. Only nongame species will be affected.
	5. Increased depths of flooding up to one foot will occur downstream from the construction area as a result of installation of the project.
C. Irreversible and Irretrievable	1. Channel work will alter wildlife habitat associated with approximately 238 acres of watershed land.

FLINT CREEK WATERSHED

SELECTED PLAN

REGIONAL DEVELOPMENT 1/

Components	Measures of effects: State of New York	Measures of effects: Rest of Nation
Income:		
Beneficial effects:		
A. The value to users of increased output of goods and services		
1. Flood prevention	$124,500 3/	
2. Sediment reduction	22,800	
B. The value of output to users by region from external economics		
1. Indirect economic (secondary) activities associated with increased agricultural production.	101,900	
Total beneficial effects	249,200	

Components	Measures of effects: State of New York	Measures of effects: Rest of Nation
Income:		
Adverse effects: 2/		
A. The value of resources contributed from within the region to achieve the outputs		
1. Channel work		
Project construction	$ 7,400	$106,100
Project administration	2,600	12,900
O&M	10,000	
Total adverse effects	$20,000	$119,000
Net beneficial effects	$229,200	$-119,000

1/ Average annual values based on 25 years at 5-7/8 percent interest.

2/ Does not include effects of the onsite land treatment measures included in this plan. The total average annual installation cost of land treatment is $52,400.

3/ In addition it is estimated that land treatment measures will provide flood damage reduction benefits of $7,900 annually.

FLINT CREEK WATERSHED

SELECTED PLAN

REGIONAL DEVELOPMENT

Components	Measures of effects	
	State of New York	Rest of Nation
Employment:		
Beneficial effects:		
A. Increase in the number and types of jobs		
1. Induced employment in storage and processing	4 man-years of employment annually semi-skilled farm employment	
2. Employment during construction of the project	40.0 man-years of semi-skilled labor will be used during construction	
3. Employment during land treatment installation phase of the project	1090 man-days of skilled labor over the 5-year installation period	
	14 man-days of semi-skilled labor over the 5-year installation period	
	464 man-days of unskilled labor over the 5-year installation period	

Cont'd.

FLINT CREEK WATERSHED

SELECTED PLAN

REGIONAL DEVELOPMENT

Components	Measures of effects	
	State of New York	Rest of Nation
4. Employment for operation and maintenance of structural measures	130 man-days of skilled labor every 5-years for channel cleanout 4 man-days of skilled labor yearly for mowing along the channel	

Net beneficial effects:
- 4.0 man-years permanent annual semi-skilled employment
- 40.0 man-years of temporary labor during construction
- 1568 man-days of temporary labor over a 5-year period for land treatment installation
- 130 man-days of temporary labor employed every 5-years for O&M
- 4 man-days of permanent annual employment for O&M

SELECTED PLAN

SOCIAL WELL-BEING

Components | Measures of Effects

Beneficial and adverse effects:

A. Real income distribution

1. Create four permanent semiskilled jobs in vegetable storage and processing plants for area residents.

2. Per capita income in the watershed will increase about $66 as a result of increased agricultural income.

3. The average net income of 10 muckland farms will be increased by about $13,100.

4. The project will help stabilize agricultural income (economic base).

5. Create regional annual income benefits distribution of $249,200 by income class as follow:

Income Class (dollars)	Percentage of Families in Income Class	Percentage of Benefits by Class
Less than 5,000	15	2
5,000-15,000	66	27
More than 15,000	19	71

6. Average annual local costs to be borne by region total $18,000 with distribution by income class as follows:

Income Class (dollars)	Percentage of Families in Income Class	Percentage Contributions by Class
Less than 5,000	15	1
5,000-15,000	66	8
More than 15,000	19	91

B. Life, health and safety

1. Will improve the standard of living of 10 muckland farm families or about 35 people.

2. Migration of rural people to urban areas will decrease.

3. Increased incomes and increases in the tax base will provide revenue to reduce the deficiencies in needed services.

PART II

USDA-SCS-EIS-WS-(ADM)-76-1-(F)-NY

FLINT CREEK WATERSHED
ONTARIO, STEUBEN, AND YATES COUNTIES, NEW YORK

Final Environmental Impact Statement

Robert L. Hilliard
State Conservationist
Soil Conservation Service

Sponsoring Local Organizations:

Ontario County Board of Supervisors
Canandaigua, New York 14424

Yates County Board of Supervisors
County Building, Penn Yan, New York 14527

Ontario County Soil and Water Conservation District
480 North Main Street, Canandaigua, New York 14424

Yates County Soil and Water Conservation District
County Building, Penn Yan, New York 14527

Steuben County Soil and Water Conservation District
117 East Steuben Street, Bath, New York 14810

February 1976

PREPARED BY

UNITED STATES DEPARTMENT OF AGRICULTURE

Soil Conservation Service
700 East Water Street
Syracuse, New York 13210

FLINT CREEK WATERSHED

PART II - ENVIRONMENTAL IMPACT STATEMENT

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USDA ENVIRONMENTAL IMPACT STATEMENT

Flint Creek Watershed Project

Ontario, Steuben, and Yates Counties

New York State

Prepared in Accordance with
Sec. 102(2) (C) of P.L. 91-190

Summary

I Final

II Soil Conservation Service

III Administrative

IV Description of project purpose and action

A project for watershed protection and flood prevention in Ontario, Steuben, and Yates Counties, New York to be implemented under authority of the Watershed Protection and Flood Prevention Act (Public Law 566, 83d Congress, 68 Stat. 666), as amended. The project will consist of conservation land treatment measures on 16,630 acres and about 18.7 miles of channel work.

V Summary of environmental impacts including favorable and adverse environmental effects

Installation of the land treatment measures will reduce agricultural flood damages by about 3 percent annually, reduce erosion rates on about 13,279 acres of cropland from 11.0 tons per acre to less than 5.5 tons per acre, reduce sediment delivered to the mouth of the watershed by 9,507 tons annually, and increase efficiencies of production.

Installation of structural measures will reduce annual floodwater damages to 1,695 acres of cropland by 70 percent, eliminate damages throughout the life of the project from growing season storms up to the 8-year frequency event, and benefit directly about 10 muckland farms or about 35 people.

Installation of the structures will result in the loss of 28 acres of cropland and 13 acres of forest land; temporary construction inconveniences; short term increase in sediment and turbidity; about 18.7 miles of channel modification; and a temporary disturbance of wildlife activity on about 238 acres.

VI List of alternatives

1. Land Treatment
2. Land Treatment and Floodwater Retarding Structures
3. Land Treatment, Floodwater Retarding Structures, and Channel Work
4. No Project

VII Comments were requested but no response was received during the review of the draft Environmental Impact Statement from the following agencies:

Department of Commerce
Advisory Council on Historic Preservation
Federal Power Commission
Great Lakes River Basin Commission
New York State Office of Planning Services
National Audubon Society
Natural Resources Defense Council
International Joint Committee
Friends of the Earth
Environmental Defense Fund
National Wildlife Federation
Environmental Impact Assessment Project

Comments were received from the following:

Department of the Army
Department of Health, Education, and Welfare
Department of the Interior
Department of Transportation
Office of Equal Opportunity - USDA
Environmental Protection Agency
New York State Department of Environmental Conservation
Ontario County Environmental Management Council
Town of Seneca Planning Board
Town of Gorham Planning Board
Elizabeth B. Rugar, Citizen-Taxpayer
Genesee/Finger Lakes Regional Planning Board, Natural Resources Committees

VIII Draft Statement transmitted to CEQ on September 22, 1975.

USDA SOIL CONSERVATION SERVICE
FINAL ENVIRONMENTAL IMPACT STATEMENT[1/]

for

Flint Creek Watershed
Ontario, Steuben and Yates Counties, New York

Installation of this project constitutes an administrative action. Federal assistance will be provided under authority of Public Law 83-566, 83d Congress, 68 Stat. 666, as amended.

Sponsoring Local Organizations

Ontario County Board of Supervisors
Yates County Board of Supervisors
Ontario County Soil and Water Conservation District
Yates County Soil and Water Conservation District
Steuben County Soil and Water Conservation District

1/ All information and data, except as otherwise noted, were collected by the Soil Conservation Service and Forest Service, U. S. Department of Agriculture.

PROJECT PURPOSES AND GOALS

The Sponsors are aware of society's concern and emphasis for enhancement of the natural resources as a source of present enjoyment and a heritage for future generations. Therefore, the project objective is to enhance environmental quality by the management, conservation, preservation, creation, restoration, or improvement of the quality of certain natural and cultural resources and ecological systems.

The following goals are outlined as initially agreed to between the Sponsoring Local Organizations and the Service and subsequently refined during project formulation. The Sponsor's recognize that competing or conflicting uses of the same areas may occur in meeting the stated goals and that the planned project may not provide for all of these stated goals.

1. Provide watershed protection to:

    a. Reduce erosion rates on upland cropland to less than three tons per acre.

    b. Reduce gross sheet erosion by 50 percent.

    c. Reduce wind erosion on the muckland by 50 percent.

    d. Reduce fertilizer and agricultural chemical losses resulting from erosion.

    e. Improve water quality through the reduction of stream sediment load.

2. Reduce agricultural floodwater damages on the 1,695 acres of muck cropland.

    a. Reduce floodwater damages on the muckland by at least 70 percent.

    b. Provide five-year frequency minimum level of flood protection to the developed muckland from storms occurring during the growing season.

3. Reduce the rate of muck subsidence.

4. Enhance or maintain existing quality and quantity of fish and wildlife habitat.

5. Preserve, enhance, and enjoy archeological, historical, scientific, and scenic resources identified within the watershed.

PLANNED PROJECT

LAND TREATMENT MEASURES

The land treatment phase of the plan includes technical assistance and measure installation and applies to each acre in the watershed. The land treatment phase includes continuation of the ongoing technical assistance and measure installation at a rate in existence prior to the formulation of this plan and accelerated technical assistance and measure installation required to meet project objectives. Technical assistance, going and accelerated, will be used to review, revise and update existing conservation and woodland plans, to develop new plans where needed, for soil surveys, resource inventories and for installation of measures. Technical assistance will thus be applicable to any acre in the watershed. Measure installation will be on those acres which require treatment for adequate protection and for changes in use.

It has been agreed by the soil and water conservation districts, community leaders, landowners, and state and federal agencies that adequate land treatment should be applied during the 5-year installation period to 14,500 acres of cropland to include conservation cropping system, drainage main or lateral, field windbreaks, irrigation system-sprinkler, pumping plants for water control, subsurface drains, diversions, and stripcropping; 1,000 acres of pastureland to include pasture and hayland management and planting; 1,070 acres of forest land to include tree planting, harvest cutting, hydrologic stand improvement, woodland grazing control, and erosion control - skid trail and logging road; and 370 acres of other land to include ponds, fishpond management, and wildlife upland habitat management. Definitions for land treatment measures are in Appendix E.

Wildlife habitat management practices will be interspersed throughout the watershed. These practices will include planting grasses, legumes, and shrubs; mowing; maintaining a diversity of habitat; and managing other valuable wildlife food plants. Other practices will include minimum tillage, properly using the residues of grain and seed crops and stubble mulching to leave waste grain and stover on the soil surface for winter food supply and winter cover. Cover crops will be planted annually which will furnish winter wildlife food. Fence line cover will be maintained for pheasant and small grain cover.

STRUCTURAL MEASURES

Planned structural measures include about 18.7 miles of channel work, three grade stabilization structures, and about 43 structures for water control. Location of the channel work and the three grade stabilization structures are shown on the Project Map, Appendix B.

CHANNELS

The channel work is classified as open channels. These channels are designed initially to carry the 10-year frequency growing season storm discharge. Due to muck subsidence the channel capacity will be reduced from the 10-year to the 8-year frequency event by the end of the project life (25 years).

Construction of the 18.7 miles of channels will follow the present alignments of existing manmade ditches. Their capacity will be increased by excavation of the bottom of the ditch and from one side. See Figure 1. Approximately 8.1 miles of channel construction will be enlargement of existing, manmade ditches located primarily in cropland areas.

Channels will be constructed through soils consisting of muck, with depths varying from 18 inches to eight feet, overlying mineral soils. The mineral soil, consists of silts, silty sands, sands, and gravelly sands. Excavated muck material will generally be spread on the field side of any road, dike, or spoil bank.

Roadbanks and spoil areas will be covered with muck soil, where available, to ensure rapid establishment of vegetation to minimize erosion.

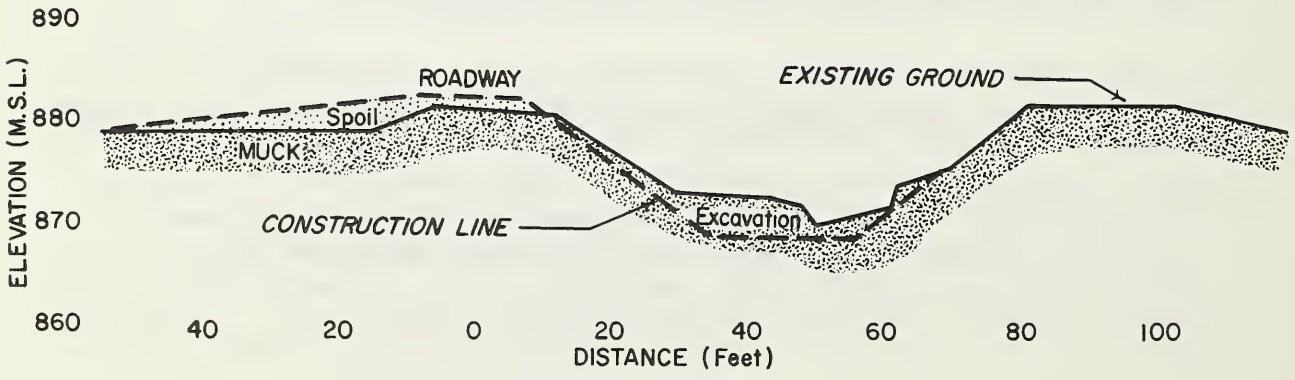


FIGURE 1 - TYPICAL SECTION OF OPEN CHANNEL

GRADE STABILIZATION STRUCTURES

The grade stabilization structures are designed as island-type box inlet drop spillways. The island-type spillway is particularly adaptable where the peak runoff is greater than the design capacity of the outlet channel into which the structure is placed. These structures are designed for grade control to stabilize the channels. The grade stabilization structure locations are shown on the project map in Appendix B. Figure 2 shows a typical box inlet grade stabilization structure.

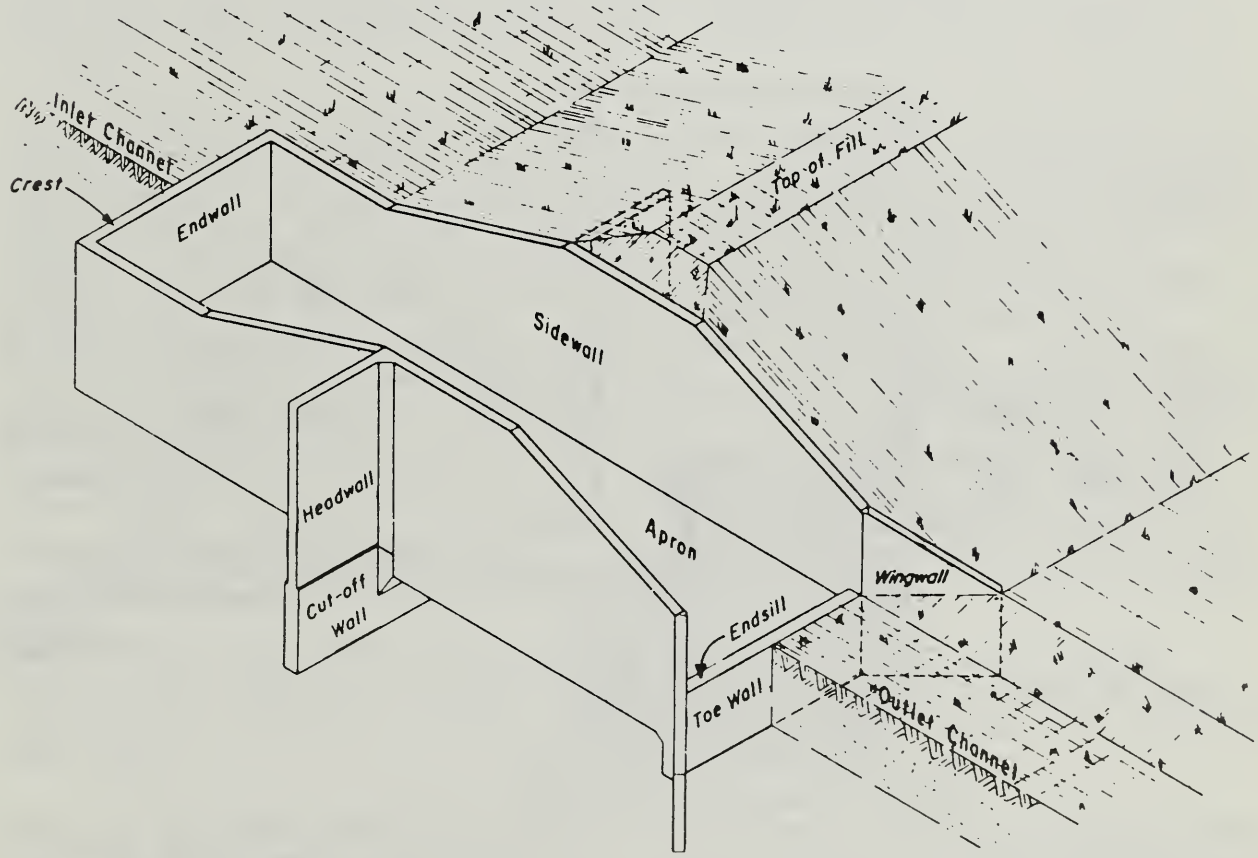


FIGURE 2 - GRADE STABILIZATION STRUCTURE

STRUCTURES FOR WATER CONTROL

Approximately 43 structures will be required for the project including several existing structures which require modification. The structures will be located onfarm, adjacent to maintained travelways along the proposed channels. Each structure for water control will be designed to collect onfarm runoff and discharge by gravity through an outlet pipe. The recommended and most acceptable structure is one designed which will function by gravity; and at the option of the operator, will allow the installation of a pump for water level control with only minor modifications. A typical structure of this design is shown in Figure 3. There are several other structural designs that are adequate that may be chosen during final design provided the overall performance of the measures or environmental impacts are not affected.

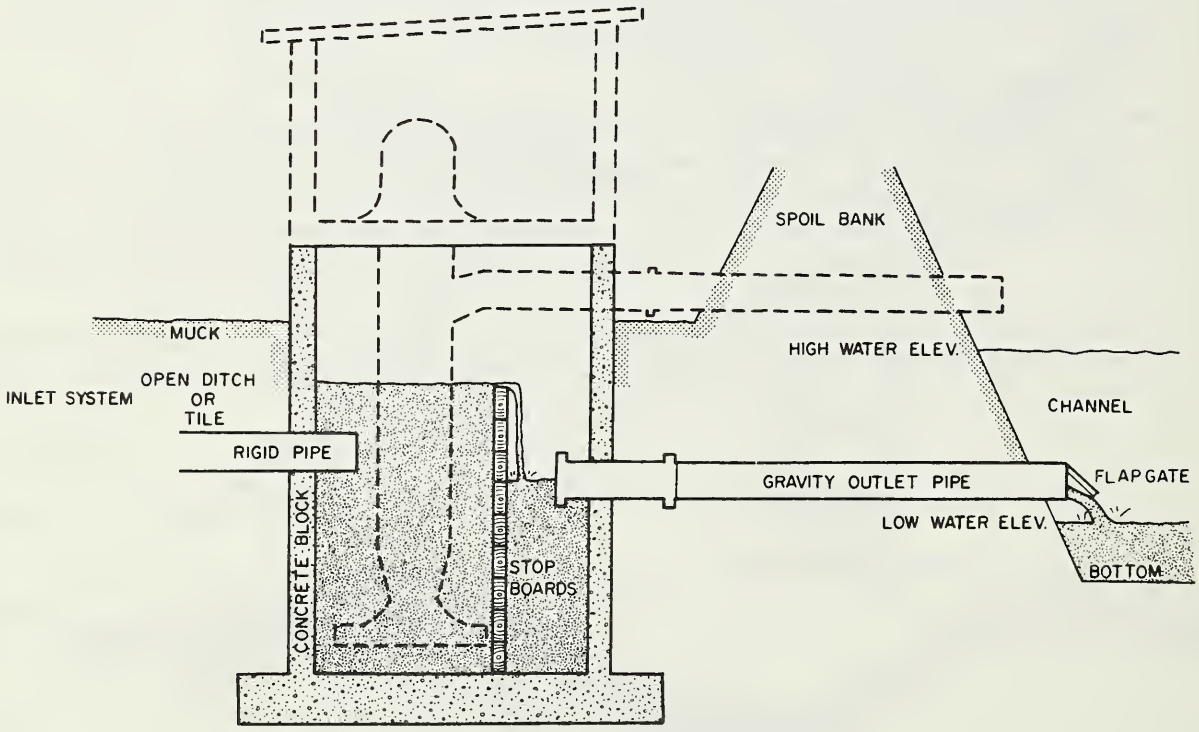


FIGURE 3 - TYPICAL STRUCTURE FOR WATER CONTROL

GENERAL

Construction will require the removal and replacement of about 10 culverts; three for field access and seven for operation and maintenance travelways. These culverts will be used to stabilize the channel at the outlet end of each lateral shown on the project map.

Where channel enlargement is necessary, material will be excavated from one side to preclude total destruction of wildlife habitat. Disturbed areas will be reseeded to adapted grasses and legumes to provide additional wildlife cover.

Channel work will require the acquisition of approximately 238 acres of land. Landrights will be acquired by fee simple title or permanent easement. Present land use is 65 acres of existing channel areas and travelways, 153 acres of cropland, 7 acres of grassland, and 13 acres of forest land. Future land use of this area will be for channels and travelways for channel maintenance. Public use will be restricted by gates.

Each contract will require that contractors adhere to strict specifications for minimizing soil erosion, water, noise, and air pollution during construction. The specifications will include provisions for measures, such as sediment basins and temporary vegetation and mulching, to protect exposed areas until permanent vegetation is established. Adherence to state and local health requirements will be required regarding disease vector control, noise, and air pollution. Suppressors will be used to keep dust within tolerable limits. Pollution of surface areas or ground water by chemicals, fuel, lubricants, sewage, and other pollutants will not be permitted. Clearing and disposal of brush and vegetation will be carried out in accordance with applicable state and local laws. A barrier (i.e. plastic filter cloth) will be installed at the downstream end of the channel work when necessary to prevent sediment from reaching the downstream fishery during excavation.

Requirements for safety and health, in conformance with the Federal Construction Safety Act of 1969 (P.L. 91-54), will be included in each construction contract. Design and construction will comply with applicable state laws.

The plan has been coordinated with the Division of Historic Preservation, New York State Parks and Recreation. Investigations to date indicate that the project will not encroach on any historic place or any places planned for historic preservation. If artifacts or other items of archeological or historic significance are uncovered by SCS, or brought to its attention by others prior to or during construction, the State Commissioner of Parks and Recreation and the National Park Service will be notified. Construction will not begin or continue until appropriate arrangements for survey or salvage have been made as set forth in the Archeological and Historical Preservation Act (PL 93-291). Since this is a federally assisted local project, there will be no change in the existing responsibilities of any federal agency under Executive Order 11593 with respect to archeological and historical resources.

OPERATION AND MAINTENANCE

Land treatment measures will be operated and maintained by the landowners and operators. Technical assistance will be provided by the Ontario County Soil and Water Conservation District, the Yates County Soil and Water Conservation District, the Steuben County Soil and Water Conservation District, and the New York State Department of Environmental Conservation (Division of Lands and Forests), subject to availability of resources.

Annual operation and maintenance cost for the structural measures is estimated to be $10,000. This cost will be borne by the Flint Creek Small Watershed Protection District by taxing of the beneficiaries. Operation and maintenance to be performed by the district involves mowing the channel banks and cleaning the channels to maintain the design channel capacity and dimensions. Maintenance activities will be timed to minimize damage to wildlife.

The Sponsors and the Soil Conservation Service will make a joint inspection annually, after unusually severe floods, and after the occurrence of any other unusual conditions that might adversely affect the structural measures. They will jointly determine what maintenance measures are needed. These inspections will continue for three years following installation of the structures. Inspection after the third year will be made annually by the Sponsors. They will prepare a report and send a copy to the Service.

An establishment period of three years is provided for all structural works of improvement and associated vegetative cover. During this period the Soil Conservation Service may use P.L. 566 funds to cost share on any repairs or other work resulting from unknown conditions or deficiencies. Such cost will be shared in the same ratio as for the original structural measures.

Repairs or additional work not eligible for P.L. 566 financial assistance include maintenance work and work resulting from improper operation and maintenance. However, the Soil Conservation Service will provide technical assistance that may be needed in performing any of these tasks.

An operation and maintenance agreement, between the Soil Conservation Service and the Watershed Protection District, will be executed for each structure prior to the signing of a project agreement. It will include specific provisions for retention and disposal of property acquired or improved with P.L. 566 financial assistance. The agreement will contain a reference to the State of New York Watersheds Operation and Maintenance Handbook. An operation and maintenance plan will be prepared for each structure in accordance with guidelines contained in the handbook.

PROJECT COSTS

The following table summarizes Public Law 566 and other costs involved in project installation.

TABLE C - PROJECT INSTALLATION COSTS SUMMARY

(Dollars) 1/

	P.L. 566	Other	Total
Land Treatment	160,700	517,300	678,000
Structural Measures			
Construction	1,216,600	0	1,216,600
Engineering	156,300	0	156,300
Landrights	0	95,600	95,600
Project Administration	165,800	34,400	200,200
Total Project	1,699,400	647,300	2,346,700

1/ Price base 1976.

ENVIRONMENTAL SETTING

PHYSICAL RESOURCES

Flint Creek Watershed, located in western New York, consists of about 101.3 square miles, or 64,860 acres. Approximately 46 percent of the watershed is in Ontario County, 51 percent in Yates County, and three percent in Steuben County. Portions of 10 towns comprise the watershed area, which has a population of about 2,740. The population is rural in character; however, Rochester (population 296,300) is located within 30 miles and the cities of Canandaigua (population 10,490) and Geneva (population 16,790) are located within 10 miles of the mouth of the watershed.

FIGURE 4

WATERSHED

LOCATION

MAP

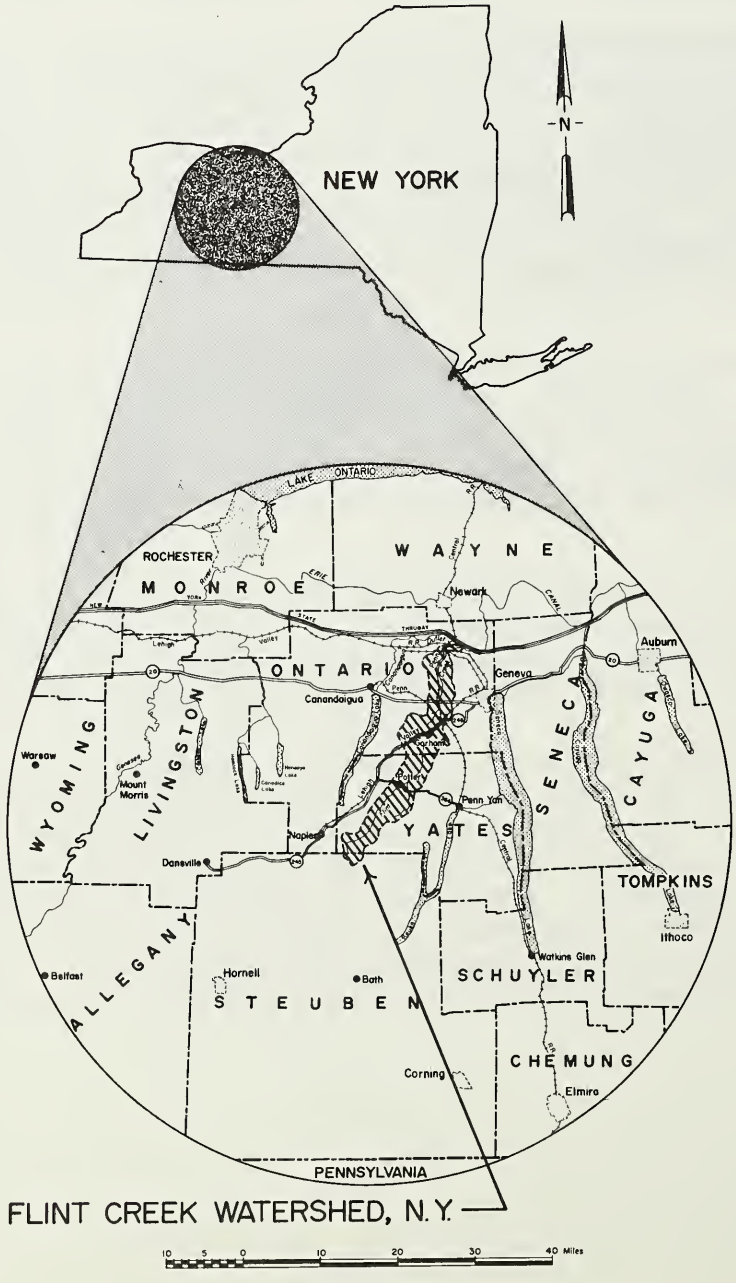


FIGURE 5

WATER

RESOURCE

REGION

MAP

The watershed is located within the Water Resources Council's Great Lakes Water Resource Region and the Southwestern Lake Ontario Subregion (Figure 5, Water Resource Region Map).

The watershed is located in the eastern portion of the Great Lakes Water Resource Region and is within the Oswego River Basin. Two major land resource regions are represented in the watershed with the boundary occurring in the vicinity of the village of Potter. The northern part of the watershed is in the Ontario-Mohawk Plain Land Resource Area of the Lake States Fruit, Truck, and Dairy Land Resource Region. The southern part of the watershed is located in the glaciated Allegheny Plateau and Catskill Mountain Land Resource Area of the Northeastern Forage and Forest Land Resource Region (2). 1/ Agriculture in the watershed is similar to that conducted throughout the Great Lakes States. The watershed is similar to other watersheds in the Oswego River Basin in terms of topography, climate, and soils. This is particularly true in relation to muck resources which exist throughout the Ontario-Mohawk Plain Land Resource Area.

Flint Creek originates north of Prattsburg in Steuben County, flows northward through the villages of Italy, Potter, Gorham, and Flint, to join with the Canandaigua Outlet at Phelps. See Watershed Project

1/ Numbers in parenthesis indicate references appearing in Bibliography, Appendix D.

Map. Canandaigua Outlet flows northward from its confluence with Flint Creek to join the New York State Barge (Erie) Canal near the village of Lyons in central Wayne County.

Most of the tributaries of Flint Creek consist of short steep-gradient intermittent streams that drain the slopes bordering the valley. The principal exceptions are the creeks draining Segar Gully, which also drains the irregular area at the upper end of the basin, and Nettle Valley Creek located southeast of Potter. Nettle Valley Creek joins Flint Creek approximately one mile north of Route 364.

The primary soil and water resource problem is periodic floodwater damage on about 2,610 acres of flood plain underlain by organic muck, of which 1,695 acres are cultivated. (See Project Map.) The present channels in the problem area are adequate in depth and capacity for drainage purposes. However, excess runoff from the upland areas flood the muck on an annual basis. Erosion damage is occurring on steep cropland. The muckland is damaged by wind erosion and subsidence.

Surface subsidence of muck soil is occurring as a result of soil shrinkage by oxidation and compaction and direct soil loss by erosion and burning. Shrinkage is increased with uncontrolled drainage. Lowering of the water table permits entry of air into the soil pores. Oxidation of the organic soil by action of aerobic bacteria converts such matter to carbon dioxide, which escapes into the atmosphere, and water. The removal of water by drainage causes the weight of upper soil layers to compact lower layers. The operation of farming equipment, in preparing and compacting seedbeds, consolidates surface layers by pulverizing aggregates of soil particles and eliminating larger soil voids.

The climate is humid continental (12). The average growing season rainfall is 15 inches (5) which is 45 percent of the mean annual 33-inch precipitation. Summers are relatively cool with an average July temperature of 72 degrees Fahrenheit. Winters are moderately cold with an average January temperature of 26 degrees. The average annual temperature is 49 degrees with extremes having ranged from -31 degrees to 106 degrees (34). The growing season lasts about 153 days and has a mean temperature of 65 degrees. Figure 6 illustrates monthly precipitation distribution.

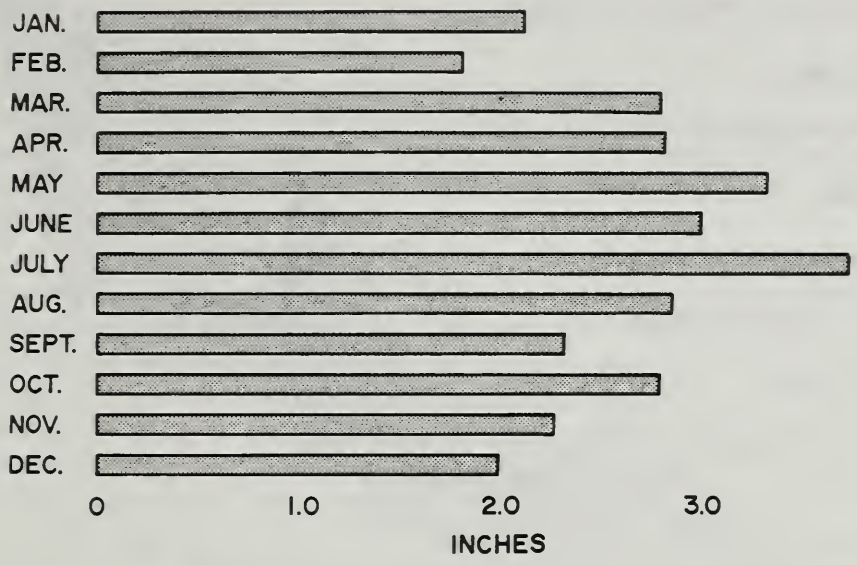


FIGURE 6 - MONTHLY PRECIPITATION DISTRIBUTION

Bedrock in the watershed is predominantly sandstone and shale with occasional beds of limestone. Bedrock exposures are mainly limited to a rock cut in the village of Gorham, the steep valley walls of Flint Creek itself, some of the small side tributaries and occasionally in the uplands. Depth to bedrock beneath the muckland is more than 90 feet. See Figure 7 for generalized geologic map.

The southern part of the watershed is characterized by a wide valley with moderately steep topography on the uplands, while the northern part has a narrower flood plain with gentle upland topography. Elevations in the watershed range from 455 to 2,174 feet above mean sea level (m.s.l.).

With the exception of approximately 2,610 acres of muck soil, the watershed is primarily composed of soils derived from glacial till. The major valleys have glacial outwash terraces along their edges and alluvial soils occupy the flood plains.

In the northern half of the watershed, soils of the Honeoye-Lima Association and the Carlisle Muck comprise the most productive agricultural land in the watershed. In the southern half of the watershed, the Lansing-Darien, Mardin-Fremont-Volusia, and Valois-Erie Associations are fair soils for crop production. Lordstown-Manlius soils also occur in the southern part. A detailed soil survey of the watershed has been completed.

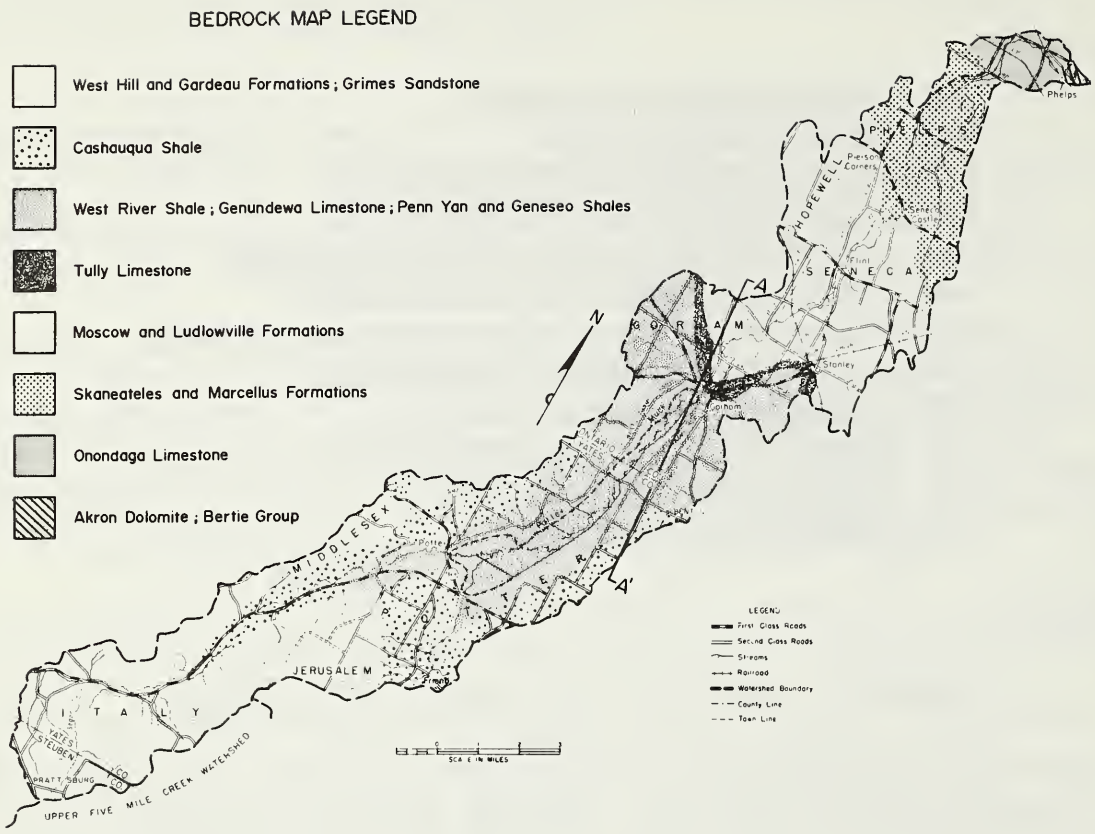


FIGURE 7 - GENERALIZED GEOLOGIC MAP AND CROSS SECTION

Muck (organic) soils occur along Flint Creek. The formation of the organic soils is the result of a receding glacial lake. This lake was originally formed by a restriction in the outlet which could have been the result of bedrock outcroppings, deposits of glacial material, or a combination of both. The lake was gradually filled by the deposition of sediment originating from the surrounding uplands, leaving a shallow swamp. Natural processes of eutrophication ensued. Decaying organic matter in this swamp produced the muck soils which, upon clearing and draining, became suitable for agricultural purposes.

The present channel system through the muckland was developed around 1950 when the land was cleared and drained for agricultural purposes. In 1973, following Hurricane Agnes, sediment and silt was removed from Flint Creek as authorized under Section 216, Flood Control Act of 1950. This action was deemed necessary to provide immediate protection from flooding by returning the Flint Creek channel capacity to pre-Agnes condition. Approximately two feet of sediment, silt, and debris were removed from the channel. The contract cost for channel excavation, spoil spreading, and seeding was approximately $110,000.

Soils in the watershed have been grouped by land use into capability subclasses as shown in Table D - Present Land Use. Land capability classification (22), is a system by which soils are grouped together by classes and subclasses, based on their limitations and hazards for agricultural use. Capability classes are designated by Roman numerals with limitations in use becoming progressively greater from Class I through Class VIII. Soils in the first four classes under good management are capable of producing adapted plants, such as forest trees or range plants, and the common cultivated field crops and pasture plants. Soils in Classes V, VI, and VII are suited to the use of adapted native plants. Some soils in Classes V and VI are producing specialized crops, such as certain fruits and ornamentals, and even field and vegetable crops under highly intensive management involving elaborate practices for soil and water conservation. Soils in Class VIII do not return onsite benefits for inputs of management for crops, grasses, or trees without major reclamation. Capability subclasses are a grouping of units having similar kinds of limitations and hazards. Four general kinds of limitations or hazards are recognized: e - erosion, w - wetness, s - rooting zone limitations, and c - climate.

TABLE D - PRESENT LAND USE

Land Use 1/	SOIL CAPABILITY SUBCLASSS 2/ I Acres	IIe Acres	IIs Acres	IIw Acres	IIIe Acres	IIIs Acres	IIIw Acres	IVe Acres	IVs Acres	IVw Acres	VIe Acres	VIs Acres	VIw Acres	VIIe Acres	VIIs Acres	VIIIw Acres	VIIIs Acres	Total	%
Forest Land - Muck	-	-	-	-	-	-	915	-	-	-	-	-	-	-	-	-	-	915	1
Mineral	275	4,211	46	1,602	4,275	21	2,354	1,253	2	549	1,562	8	319	3,344	52	30	654	20,557	32
Urban Land	308	286	10	162	16	22	50	0	0	9	17	0	6	35	0	0	0	921	1
Open Land Formerly Cropped	66	1,094	4	297	1,163	0	265	193	0	247	201	0	8	586	25	0	0	4,149	6
Cropland - Muck	-	-	-	-	-	-	1,695	-	-	-	-	-	-	-	-	-	-	1,695	3
Mineral	1,285	14,563	251	4,733	3,301	232	4,517	233	10	601	445	49	148	154	0	0	0	30,522	47
Pastureland	62	816	0	225	554	2	154	258	0	80	147	0	37	62	6	0	18	2,421	4
Other Land	228	1,420	4	452	343	28	335	55	0	80	532	0	46	95	1	2	59	3,680	6
TOTAL	2,224	22,390	315	7,471	9,652	305	10,285	1,992	12	1,566	2,904	57	564	4,276	84	32	731	64,860	100

1/ Cropland - Land which is used for row crop, close-grown field crops, fallow, rotation hay and pasture,and hayland.
Open land Formerly Cropped - Land which formerly had grown agricultural crops but is now undergoing natural plant succession.
Pastureland - Land producing forage plants for animal consumption.
Urban Land - Built-up areas, industrial and commercial sites, etc.
Other Land - Includes farmsteads, farm roads, feedlots, ditch banks, fence and hedgerows, marshes, and recreation areas.
Forest Land - Land at least 10 percent stocked or formerly stocked by forest trees, noncommercial trees, and afforested (plantation) areas.

2/ Capability Class V does not occur in this watershed.

Forest land is defined as land which is at least 10 percent stocked by forest trees, and is capable of producing either timber or other wood products or exerting an influence on the water regimen. It has been determined that 20 percent of the forest land is presently in poor, 36 percent in fair and 44 percent in good, hydrologic condition.

Hardwood stands occupy 88 percent of the forest land and consist of sugar maple, beech, birch type, and the red and white oak types with associates of red maple, basswood, and white ash. Mixed stands of white pine, hemlock and the above hardwood species occupy eight percent of the area. The remaining four percent contains pure softwood stands of hemlock, white pine, or established plantations. Balsam fir and tamarack are also present in small plantations in the southern portion of the watershed, and are rare in this area of the state.

About 32 percent of the forest area contains sawtimber stands with 1,500 board feet or more per acre. Thirty-six percent of the forest stands are classed as pole size and 32 percent as seedlings or saplings. Adequate forest fire protection is provided by local volunteer fire departments. There have been no forest fires during the past five years.

Table E describes wetlands (10 acres or larger in size) that have been identified. These wetlands are located in Figure 13.

TABLE E - WETLANDS IN THE WATERSHED

No. 3/	Wetland Types 1/ 6 (acres)	7 (acres)	Used for 2/ Agricultural Purposes (acres)	Total (acres)
1		14		14
2	28			28
3	20	84	126	230
4		30	12	42
5		10		10
6		16	18	34
7		10		10
8		15		15
9	2	6	4	12
10		34		34
11	10			10
12		10		10
13		10		10
14	25	34		59
15		14		14
16	2	9		11
17		14		14
18		14		14
19		11		11
20		10		10
21		95		95
22		15		15
23	6	9		15
24	3	3	4	10
25		240		240
26	18			18
Forest Land - Muck		915		915
TOTAL	114	1,622	164	1,900

1/ Wetlands listed by types as defined by "Wetlands of the United States," Department of the Interior, Fish and Wildlife Service, Circular C39. Inclusion of other types may occur within those listed, but were not listed separately due to small size.

Type 6 wetlands (shrub swamps) contain such vegetation as alders, buttonbush, and dogwoods. Habitat in this vegetation is provided for rabbits, songbirds, woodcock, and deer.

Type 7 wetland (wooded swamps) contains vegetations such as red maple and elm. This type wetland provides habitat for deer, grouse, and songbirds.

2/ Wetlands shown on topographic maps; currently used for agriculture.

3/ See Figure 13 for locations.

Ground water resources in the muckland area are extremely limited due to deposits of fine sand, silt, and clay beneath the muck. These deposits are poor sources of water because they have a low permeability, and thus will yield only small quantities of water to large diameter wells. Wells adjacent to the muckland in Ontario County yield from 2.2 to 5 gallons per minute (33). These yields are adequate for domestic usage, but not for irrigation. Mineral resources are limited to small sand and gravel deposits.

Water quality classification, type of channel, and flow conditions for the streams, defined by the New York State Department of Environmental Conservation, are presented in Table F. The Rochester Field Office of the Environmental Protection Agency (EPA) collected water quality samples in the watershed on November 5, 1974. Phosphorus levels ranged from a low of .011 mg/l in the headwaters to a high of 0.128 mg/l in the muck area. Heavy metals ranged from a low of 0.0002 mg/l for mercury to a high of 0.168 mg/l for aluminum. Levels of the chlorinated pesticides from all samples were at the detection limits of the test. Complete results of these samples are included in Appendix F.

The ambient air temperature and water temperature were obtained at selected points for the period July through November 1974. Water temperatures in most areas range from the high sixties (degrees Fahrenheit) in July and August, the low sixties in September, and the low fifties in October. In the muck area the July-August temperatures run about five degrees higher. October water temperatures were about the same at all sample points. These data were collected by the Soil Conservation Service and are presented in Appendix F.

TABLE F - STREAM QUALITY CLASSIFICATION 1/

Stream	Location	Type of Channel	Flow Condition	Water Quality Classification 2/
Flint	Source to Potter	Well-defined natural	Perennial	A
Flint	Potter to Gorham	Previously modified	Perennial	A
Flint	Gorham to Outlet	Well-defined natural	Perennial	D
Nettle Valley	Source to Rt. 364	Well-defined natural	Perennial	C
Nettle Valley	Rt. 364 to Flint Creek	Previously modified	Perennial	C

1/ Classification and standards governing the Quality and Purity of Waters of New York State (Parts 700-703, Title 6, Official Compilation of Codes, Rules, and Regulations), New York State Department of Environmental Conservation, Albany, New York.

2/ Definitions of water quality classifications for best usage are as follows:

Class A: Source of water supply for drinking (if subjected to approved treatment), culinary or food processing purposes, and any other usages.

Class C: Fishing and any other usages except for bathing or as source of water supply for drinking, culinary, or food processing purposes.

Class D: Agricultural or source of industrial cooling or process water supply and any other usage except for fishing, bathing, or as source of water supply for drinking, culinary, or food processing purposes.

Stream gage records within the watershed are limited. The maximum and minimum discharges recorded for the period of record are shown in Table G.

TABLE G - MAXIMUM AND MINIMUM RECORDED DISCHARGES

Stream Gage Location	Period of Record	Maximum Discharge Recorded (cfs)	Date Recorded	Minimum Discharge Recorded (cfs)	Date Recorded
Flint Creek at Potter	3/64-9/68 10/70-Present	5,040	6/23/73	0.02	9/23/64
Flint Creek at Phelps	10/59 to present	2,940	3/30/60	No flow many days during	1962-1965

For the purpose of estimating floodwater damages it was necessary to estimate the frequency of flood peaks which have occurred in the evaluation area. Two basic types of frequency series were developed from the available stream flow records. The modified partial-duration frequency, which considers all floods above a certain base within the year, was developed to be used for evaluation computations. The growing season modified partial-duration frequency, which considers all floods above a certain base within the growing season, was developed to determine when project objectives have been met.

Monthly distribution of streamflow at Potter was determined by comparing the streamflow record obtained at that station with records for two nearby long term stations (Canaseraga Creek near Dansville, and Fivemile Creek near Kanona) and the 1960-64 record of Flint Creek at Phelps. Because the streamflow patterns at these stations are similar to those of Flint Creek at Potter, one can predict that, in an average year, between 45 and 55 percent of the discharge of Flint Creek will occur during March and April. Also, in an average year, more than 90 percent of the total annual discharge occurs between December and the following June (35).

A flow-duration curve for Flint Creek at Potter is shown in Figure 8. A flow-duration curve shows the percentage of time that the measuring station flow rate may be expected to occur or to be exceeded at that site. As an example (Figure 8), the flow of Flint Creek at Potter is expected to equal or to exceed 8.5 cfs (cubic feet per second), or 6,200 acre-feet per year, 50 percent of the time.

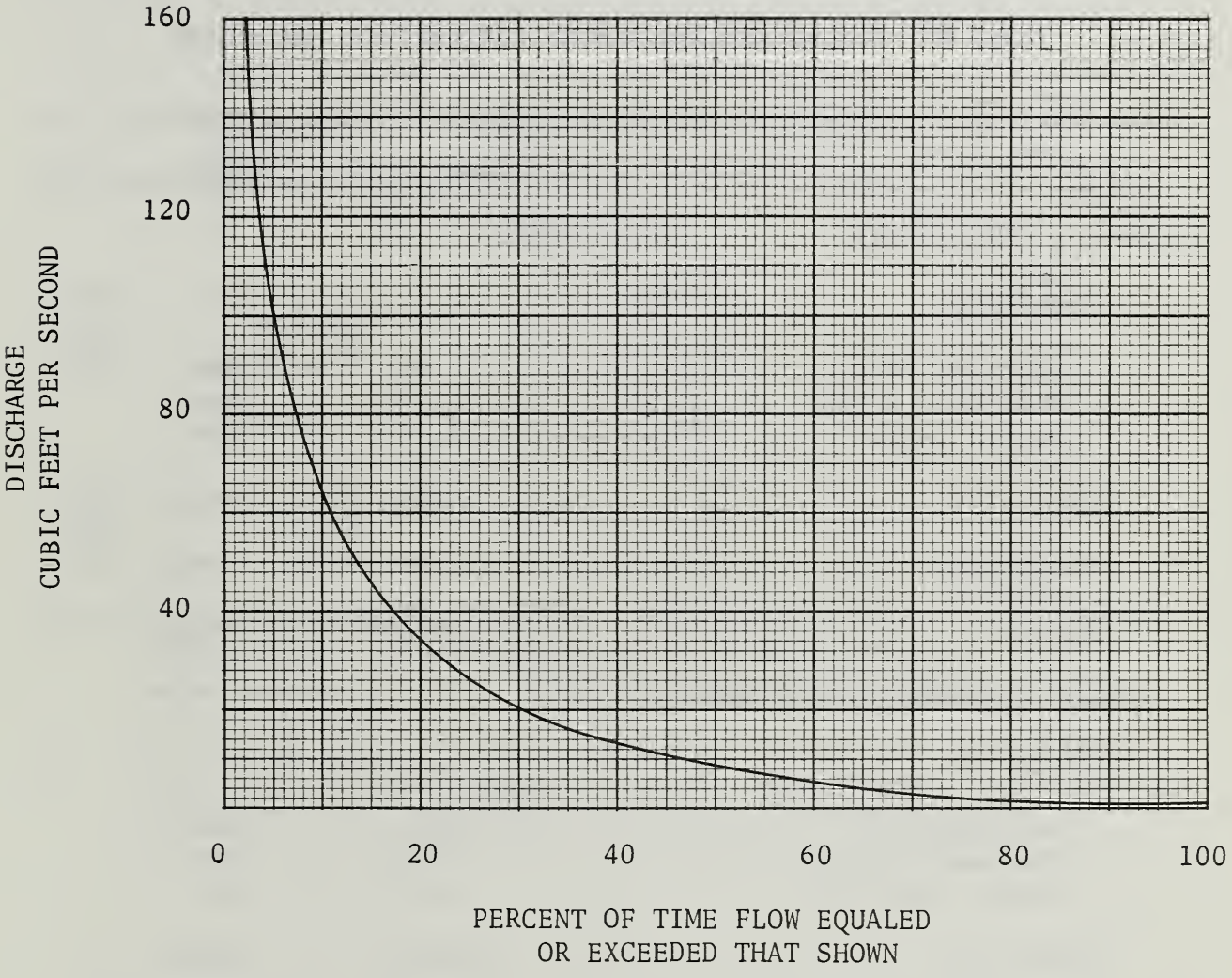


FIGURE 8 - DURATION CURVE OF DAILY FLOW, FLINT CREEK AT POTTER

Table H shows quantities of fertilizer, herbicide, pesticide, and fungicide normally applied to muck and upland cropland. After a flood, the muckland requires an additional application of about 3,000 pounds of herbicide to control weed growth resulting from germination of seeds carried in by floodwater. An additional 22 tons of fertilizer is needed to replace that which is washed away by the floods.

TABLE H - ANNUAL APPLICATION OF AGRICULTURAL CHEMICALS

Item	Quantity	Unit
Muck (1,695 acres)		
Fertilizer		
Nitrogen (N)	74	Tons
Phosphate (P_2O_5)	74	Tons
Potash (K_2O)	74	Tons
Herbicide	6,000	Pounds
Pesticide	3,200	Pounds
Fungicide	2,500	Pounds
Upland Cropland (30,522 acres)		
Fertilizer		
Nitrogen (N)	1,200	Tons
Phosphate (P_2O_5)	550	Tons
Potash (K_2O)	900	Tons
Herbicide	33,600	Pounds
Pesticide	6,800	Pounds
Fungicide	3,500	Pounds

PRESENT AND PROJECTED POPULATION

Table I illustrates present and projected population and per capita income for the region, subregion and watershed. An estimated 7.4 percent of the watershed's residents exist on poverty level incomes. The 1970 census indicates that two percent of Ontario, one percent of Steuben, and less than one percent of Yates County's population are Negro or Puerto Rican.

TABLE I - WATER RESOURCE REGION PROJECTIONS

Year	Great Lakes Region 1/	Southeastern Lake Ontario (0414) Subregion 1/	Flint Creek Watershed
		POPULATION	
1970	29,112,481	942,567	2,740
1980	31,580,900	1,029,400	2,990
2000	36,351,300	1,173,100	3,400
		PER CAPITA INCOME	
1970	3,783	3,249	2,773 2/
1980	5,200	4,500	3,830
2000	8,800	7,900	6,740

1/ U. S. Water Resources Council: Series E Population, 1972 OBERS PROJECTIONS: Regional Economic Activity in the U.S., Vol. 3, Water Resource Regions 1-8, U.S. Government Printing Office, Washington, D.C.

2/ U. S. Bureau of the Census: Census of Population: 1970 GENERAL SOCIAL AND ECONOMIC CHARACTERISTICS, Final Report PC(1)-C34 New York: U.S. Government Printing Office, Washington, D. C.

ECONOMIC RESOURCES

Projections indicate that the watershed will retain its rural character during the foreseeable future. Most of the land is privately owned; however, New York State has purchased 1,520 acres of open land formerly cropped in the upper portion of the watershed and Yates County owns 327 acres of forest land. There are no known federal holdings.

Major farm enterprises consist of dairying and cash grain production on the upland areas and truck farming and cash grain production on the muckland. The watershed contains about 350 upland farms, averaging 176 acres, and 10 muckland farms averaging 205 acres and ranging from 20 acres to 500 acres. Principal crops grown on the upland consist of corn for grain, yielding about 82 bushels per acre; corn for silage, yielding about 14 tons per acre; and alfalfa, yielding about 3 tons per acre. Principal crops grown on the muckland include corn for grain, onions, potatoes, sod, carrots, snap beans, lettuce, and sweet corn. Table J shows flood-free yields for muckland crops.

TABLE J - MUCKLAND FLOOD-FREE CROP YIELDS

Crop	Yield Per Acre
Corn (grain)	100 bushels
Onions	350 hundredweight
Beets	20 tons
Carrots	25 tons
Lettuce	385 hundredweight
Sweet Corn	2 tons
Snap Beans	4 tons

Land values in the upland in Steuben County are about $140 per acre. Upland land values in Yates and Ontario Counties are about $250 and $330 respectively (29). In contrast with the upland areas, the muck is valued at $800 to $1,000 per acre. Current values of urban land are about $500 per acre.

Markets are accessible via existing farm-to-market road systems. State and county highways traverse the watershed and the New York State Thruway (Interstate 90) passes within one mile of the northern boundary. A

second major road, U. S. Route 20, passes through the northern third of the watershed. The Lehigh Valley and Penn Central Railroads provide freight service. Major markets for farm products are located in Rochester. Smaller towns in the area, such as Gorham, Geneva, Wolcott, and Preble, also provide markets for some of the products.

The economy of the watershed is agriculturally based. Agriculture on the muckland is intensive and produces a gross annual income, from crop sales, of $2,145,000. Truck farms provide more than 30 man-years of hired employment, including 10 man-years of migrant labor. In 1971, Yates, Ontario, and Steuben Counties produced 295 thousand hundredweight of onions which represents 5.3 percent of the New York production and 1.1 percent of the United States production (28).

FIGURE 9

HARVESTED ONION CROP

The trend in landownership is toward consolidation of small farm units. This is particularly true for the muckland, where owners of large truck farms are buying or leasing the smaller farms.

The average gross income for upland farms was about $23,750 annually in 1969. About 77 percent of the upland farms are defined as family farms employing less than 1.5 man-years of hired labor annually (29).

The population remained constant between 1960 and 1970. Numbers of farm families declined; however, increases in numbers of nonfarm

families compensated for these losses. Unemployemnt rates of 10.1 percent in the watershed area and 10.2 percent in New York State were occurring as of March 1975 (17).

There is a strong market in and around the watershed area for hardwood sawtimber and some demand for veneer stock. Markets also exist for hardwood pulp and low grade logs for pallet and crate stock.

An estimated $0.71 out of every dollar of personal income is spent in retail trade in the region. An expenditure of $25,000 in the retail trade sector creates one man-year of employment (14).

The Steuben County portion of the watershed is located within the Appalachia Regional Development Program Area and the Sullivan Trail Resource Conservation and Development Project. The remainder of the watershed is in the proposed Genesee-Fingerlakes Resource Conservation and Development Project.

The watershed is located in the Oswego River Basin which was studied under the authority of Section 6, Public Law 566, 83d Congress, as amended. The "United States Department of Agriculture Report for the Oswego River Basin" was published in June 1972.

PLANT AND ANIMAL RESOURCES

Wildlife species have diverse requirements and occupy a vast variety of niches in the ecosystem. However, species may be generally grouped by main habitat into forest land wildlife, open land or agricultural wildlife, and wetland wildlife. See Table K, Estimated Population Densities of Game Species.

Forest land wildlife species are those which find both food and cover within the forest, although they may venture into open land to feed. Factors affecting the density of these species may include woodlot size, density of humans, and vegetative composition, by type and successional stage. These factors, in conjunction with climatic conditions, determine species range.

Habitat afforded to forest wildlife in the watershed is comprised of hardwoods (18,090 acres), conifers (822 acres), mixed stands (1,645 acres), and wooded wetlands (1,622 acres).

Overstory species of the hardwood stands include red oak, white ash, basswood, trembling aspen, sugar maple, beech, black cherry, big tooth aspen, and hickory. Harvest cuttings have occurred throughout these stands and trees capable of mast production represent approximately five percent. Understory species are primarily seedlings of the overstory trees. Additional woody species include thornapple, wild grape, mapleleaf viburnum, raspberry, hophorn beam, American hornbeam, and red-osier dogwood. Density is approximately 25 percent. Native grasses cover approximately five percent of the forest floor.

The mixed stands contain white pine and hemlock in addition to the species typical of the hardwood stands. Trees capable of mast production represent approximately five percent.

White pine and hemlock reproduction are also found in the understory. Hophornbeam and American hornbeam are the predominant understory species occurring with those found in the hardwood stands. Density is 15 to 20 percent. Native grasses cover less than five percent of the forest floor.

Conifer stands are primarily represented by plantations of white pine, red pine and norway spruce. These stands represent either pole or sapling stages of growth with a very dense crown canopy; understory growth is nonexistent. Small stands of mature hemlock exhibit a sparse understory of hemlock reproduction.

Principal species of the wooded wetlands include red maple, elm, silver maple, white ash, black willow, and cottonwood. Trees capable of mast production represent less than five percent due to harvest cutting.

Understory density is 20 percent and is comprised primarily of the reproduction of overstory species. Other woody species include aspen, black ash, elderberry, and red-osier dogwood. Herbacious growth is primarily impatiens and ferns, including sensitive fern and marginal shield fern.

Open land or agricultural wildlife species commonly find food in open fields, close to woody vegetation (hedgerows, forest edges, etc.), which provide escape and winter cover. The type of agriculture and management practices are important factors determining habitat suitability.

The open land formerly cropped varies in vegetive composition due to natural succession. Early stages are primarily herbacious plants becoming a mixture of predominently woody species before becoming forest land. Typical composition in the watershed is approximately 70 percent herbacious and 30 percent woody vegetation. The predominent herbacious specie is goldenrod. Additional species include bristly foxtail, Canada thistle, dandelion, burdock, milkweed, crabgrass and bluegrass. Maple-leaf viburnum, sumac, ash, dogwood and aspen are the principal woody species. Other species commonly found are willow, thornapple, grape, red maple, raspberry and blackberry.

Hedgerows of the watershed are commonly five to 10 feet in width. Ash is the predominent tree specie. Willow and red maple are also representative species. Mapleleaf viburnum, thornapple, grape, dogwood, sumac, and raspberry are common low level shrubs. Goldenrod and native grasses are found where dense low level growth does not exist.

Species commonly associated with water are known as wetland wildlife (waterfowl, shorebirds, and furbearers). The density of these species are determined by the abundance of open surface water and variety of aquatic vegetation. The limited surface water resources and wetlands of the watershed have resulted in a wetland wildlife community comprised primarily of mammals. Woodcock and migratory waterfowl pass through the area, but little nesting is found. A variety of aquatic amphibians and reptiles is common throughout the habitat. (See Appendix E, Listing of Reptiles and Amphibians.)

Table K illustrates population densities of various wildlife species by plant community regions.

TABLE K - ESTIMATED POPULATION DENSITIES OF GAME SPECIES 1/

2/ Species	Population Density by Region 3/ Southern	Central	Northern
Forest Land Wildlife			
White-tailed deer	5-6 per 100 ac.	3-4 per 100 ac.	3-4 per 100 ac.
Gray squirrels	1 per ac.	1 per 4-8 ac.	1-2 per ac.
Ruffed grouse	1 per 4-8 ac.	1 per 14-20 ac.	1 per 15-20 ac.
Open Land Wildlife			
Ringnecked pheasants	1 per 50-100 ac.	1 per 10-20 ac.	1 per 3-4 ac.
Cottontail rabbits	1-2 per 20 ac.	1-2 per 10 ac.	2-3 per 10 ac.
Wetland Wildlife			
Woodcock	Migratory	Nesting population unknown	
Waterfowl	Migratory	Nesting population unknown	

1/ Source of data: New York State Department of Environmental Conservation.
2/ Population densities not available on nongame species.
See Appendix E for listing.
3/ See Figure 13, Wildlife Habitat and Fisheries Resource Map.

Flint Creek Watershed consists of three general plant community regions. (See Figure 13.) Table L describes land uses and plant communities found in the southern, central, and northern regions.

The primary land use in the southern region is forest land. The steep valley sides are forested mainly by hardwood stands. Mixed stands are also present throughout the hillside draws and ravines. The narrow valley bottom of the region is a mixture of pasture, cropland, and open land formerly cropped, with hardwood stands scattered along the streams. Woody cover (woodlot borders, hedgerows, and open land formerly cropped) is abundant.

The occurrence of open land wildlife in this region is mainly within the valley bottom. Limited amounts of grain production localize pheasant populations. Rabbits are found throughout the woody borders.

The heavily forested region provides excellent habitat for forest wildlife. Whitetail deer and ruffed grouse occur in excellent numbers throughout the hardwoods and mixed stands of forest. Understory vegetation of these stands in addition to open land formerly cropped provide an abundance of suitable browse. Mast production also benefits these species and supports a good population of gray squirrels. Herbacious growth found on the valley bottom is linked to the forest by wooded travelways.

Whitetail deer herds winter throughout this region.

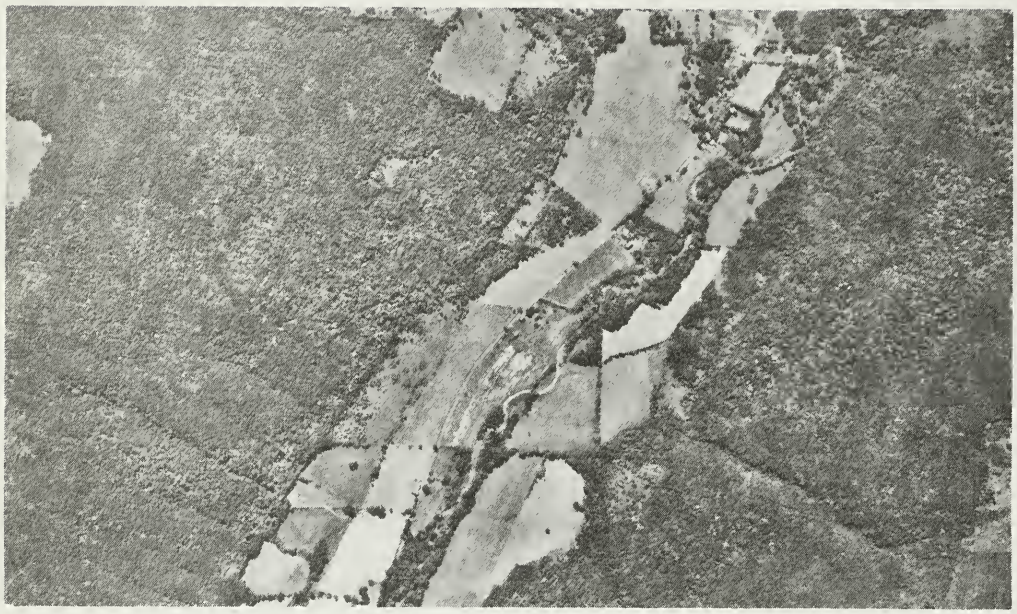


FIGURE 10 - SOUTHERN REGION HABITAT

The central region is a transition area between the wooded southern region and the agricultural northern region. Land use of upland areas consist of patchworks of open cropland and intermediate size woodlots. These woodlots which provide habitat for deer, grouse, and squirrels are comprised primarily of hardwoods with scattered mixed stands. The majority of the watershed's conifer stands exist in this region.

Open land wildlife are greater in density in this region due to a compatible land use pattern. The scattered distribution of forest in conjunction with hedgerows create woody cover within 1,000 feet of most open land. The immature conifer stands add high quality roosting and escape cover. The increase in grain production also adds to the region's carrying capacity.

The muckland lies entirely within this region. The cultivated portions of the muck are intensively utilized and provide little wildlife habitat. Muskrats exist within the drainage channels and songbirds nest in adjacent vegetation. Forest cover of the muck is comprised of wooded wetlands. The established network of drainage channels has eliminated standing water and destroyed its value to wetland wildlife. Deer, however, utilize the habitat as a wintering area.

FIGURE 11 - CENTRAL REGION HABITAT

The northern region is primarily devoted to agriculture. Small woodlots are scattered throughout the region and frequently border Flint Creek. Composition of these woodlots consist of hardwood species typical of the hardwood stands. Forests represent 15 percent of the land use. Forest wildlife are found in these areas of habitat.

The cultivated fields of hay, corn, and small grains are divided by scattered swales and hedgerows. These areas of woody vegetation provide cover within 1,300 feet of most cultivated land. Where hedgerows have been removed, however, areas of open land exist 2,400 feet from escape cover. The predominent distribution of cover and cropland in this region provides habitat for high population of open land species such as pheasants and rabbits.

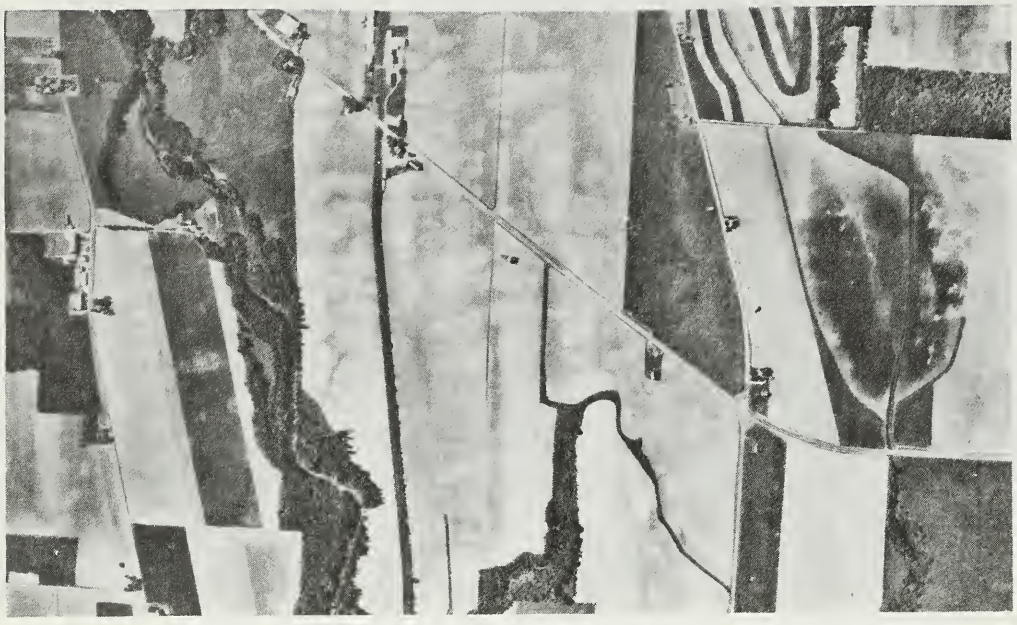


FIGURE 12 - NORTHERN REGION HABITAT

There have been no reported sightings of rare or endangered species in the watershed. Rare and endangered species of New York State are listed in the publication, "Rare and Endangered Fish and Wildlife of the United States," U. S. Bureau of Sport Fisheries and Widlife, 1968 Edition (31).

TABLE L - PLANT COMMUNITIES OF THE WATERSHED

Land Use	Acres by Region					Vegetative Types
	Southern	Central		Northern	Total	
		Upland	Muck			
Cropland	3,135	11,837	1,695	15,550	32,217	Grain (25%) Corn, Wheat Forage (70%) Alfalfa and Timothy Vegetables (5%) Beets, Cabbage, Beans
Pasture	1,022	798	-	601	2,421	Domestic Grasses (75%) Bluegrass and Timothy Native Plants (25%) Canada Thistle, Dandelion, Crabgrass, Quack Grass
Open Land Formerly Cropped	2,164	1,468	-	517	4,149	Herbaceous (70%) Goldenrod, Bristly Foxtail Woody (30%) Thornapple, Sumac, Dogwood, Raspberries
Forest Land	13,026	4,145		2,565	19,736 1/	Hardwoods (88%) Sugar Maple, Beech, Birch, Red and White Oak Mixed (8%) White Pine and Hemlock and above hardwoods Conifer (4%) Hemlock-White Pine, Balsam Fir, and Tamarack
Wetland						
Type 6	28	32	-	54	114	Alder, Willow, Buttonbush and Dogwood
Type 7	14	205	915	488	1,622	Red Maple, Elm and Ash
Other	1,813	1,653	--	1,135	4,601	Roads, Utilities, and Urban Land
TOTAL	21,202	20,138	2,610	20,910	64,860	

1/ Upland Type 6 and 7 wetlands are tabulated as Forest Land in Table D - Present Land Use

The physical characteristics of Flint Creek and the existing fishery resources are described in Table M. Stream reach locations are shown on Figure 13.

Approximately 8.6 miles of Flint Creek, south of Italy Valley Road, (Reach A), supports moderate to good quality trout population. The natural stream channel has a moderately steep gradient making riffles more abundant than pools. Bottom material is a gravel-rubble combination creating areas suitable for spawning as well as providing some instream cover. Fallen trees and a moderate amount of debris create pools capable of supporting the larger fish. The heavily wooded streambanks produce a shade cover of 80 percent and water temperatures are maintained within the tolerance levels for trout. Resident populations of wild rainbow trout exists within this reach. Brown trout yearlings are stocked at the rate of 350/mile. New York State Department of Environmental Conservation personnel estimate production of these populations to be 20-40 pounds per acre. Competitive nongame species include: black-nose dace, stone roller minnow, long-nose dace, and sculpins.

Segar Gully Brook (Reach E), a tributary of Reach A, exhibits similar physical characteristics. Stream size is smaller however and shade is more abundant. Moderate to good populations of native brook trout are found in this reach. Colder water temperatures have also eliminated all competitive species with the exception of the black-nose dace.

Water throughout these upper reaches is clear, becoming turbid only during high flows. Although no collection data is available for benthic organisms; mayfly, stonefly, and caddisfly species appear to be abundant.

Reach B is marginal trout water for a distance of two miles north of Italy Valley Road, becoming a warm water stream before it enters the Potter muck. Slow flow characteristics of the flatter stream gradient are apparent in the increased amount of pools which become flats near the muck. Riffles are not abundant. The stream bottom is more uniform due to the slower flow, and silt deposition is increased. Stream shade cover is high and aquatic vegetation is apparent within the channel. Stream meandering is also prevalent, creating limited fish cover in the form of undercut banks. The flow characteristics and warmer water temperatures of this reach are indicative of the cold to warm water fishery transition which it represents. Competitive nongame species are abundant.

TABLE M - STREAM CHANNEL AND FISHERIES

Reach and Symbol *	Name	Length (Mi.)	PHYSICAL CHARACTERISTICS					Sport	Nongame	Stocking Program
			Channel	General	Avg. Width (ft.)	Depth (In.)	Bottom Material	Shade Cover (%)			
A	Flint Creek	8.6	Natural	Moderately Steep & Primarily Riffles	10	4 to 12	Gravel Rubble	80	Moderate to good quality brown trout & rainbow trout	Black-nose dace Stone Roller Minnow Long-nose dace Sculpins	Brown trout yearlings 350/mi.
B	Flint Creek	6.1	Natural	Flat gradient with riffles Less than 15%	13	12	Silt	80	Marginal trout in upper 2 mi.	Black-nose dace Creek chub Johnny darter Grass pickerel	None
C	Flint Creek	8.0	Modified	Uniform Flat Channel	40	14	Silt	0 to 10	Some fishing for nongame species	Bullheads White suckers Grass pickerel Black-nose dace Stone Roller Minnow Mud Minnows Carp	None
D	Flint Creek	16.3	Natural	Sluggish Stream with riffles less than 15%	20	14 to 20	Silt with gravel in areas of faster flow	60			
E	Segar Gully Brook	3.6	Natural	Moderately steep with primarily riffles	6	4 to 12	Gravel Rubble	90	Moderate to good brook trout	Black-nose dace	None
F	Nettle Valley Creek	7.1	Natural	Good pool riffle ratio (1:1)	12	4 to 24	Gravel	90	Fair quality brown trout	Creek chub	Brown trout Fingerlings 200/mi.
	5 Main Drainage Laterals	8.3	Manmade	Summer flows often retained for irrigation			Silt	0 to 10	None	None	None
	57 small unnamed tribs.	Unknown	Natural	Steep intermittent stream	2 to 8		Gravel Rubble	60	None	Creek chub Black-nose dace	None

*See Figure 13 for location

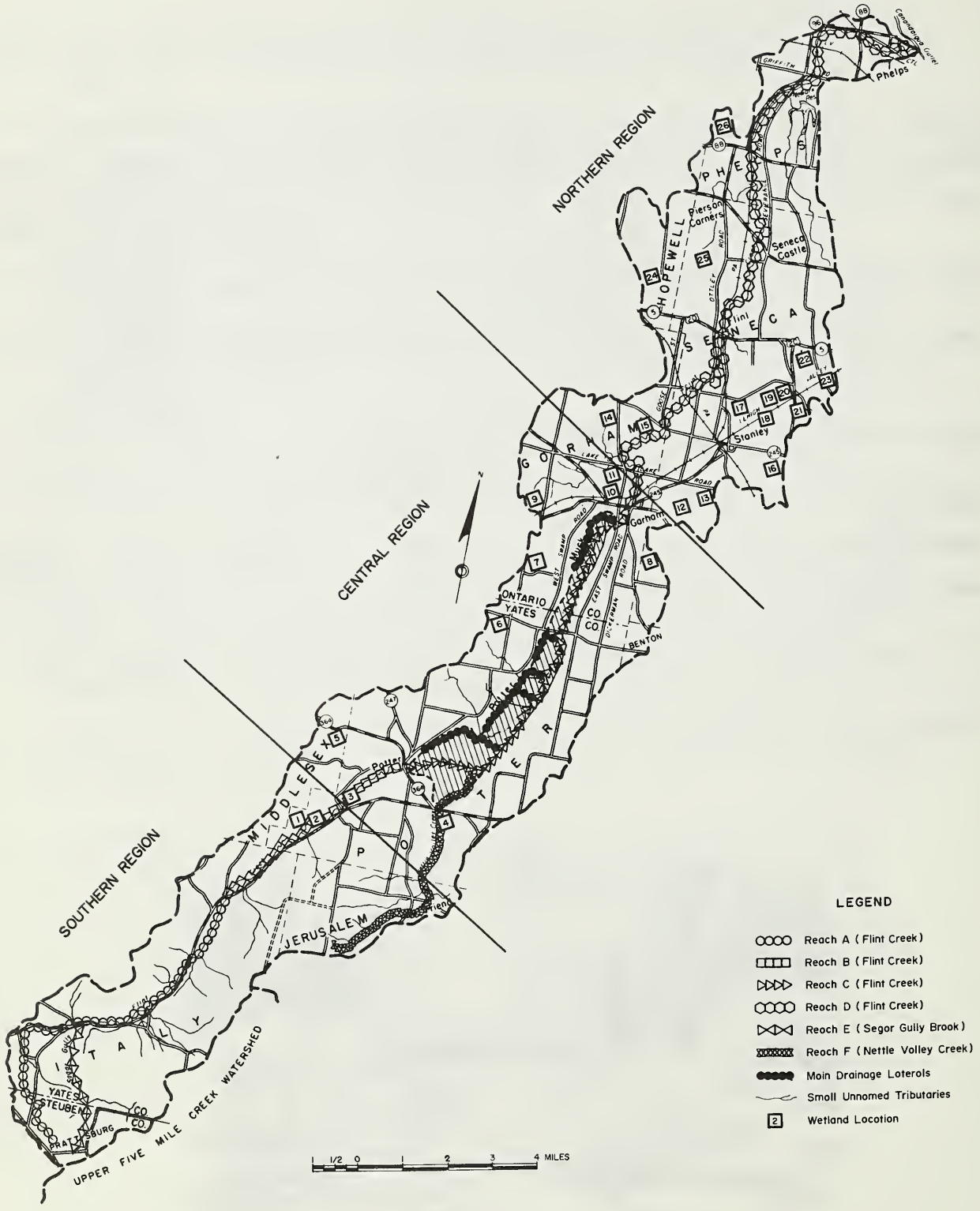


FIGURE 13 - WILDLIFE HABITAT AND FISHERIES RESOURCE MAP

Reach C through the muckland consist of a straight, uniform manmade channel with a flat gradient. Stream flow is sluggish and appears almost stagnant. The muddy bottom of this reach is comprised mostly of fine silts. The elimination of aquatic vegetation, through channel maintenance, and shallow depths (average 14 inches) have made fish cover near nonexistent. Only limited populations of nongame species exist within this reach. (See Table M.)

Adjacent channel vegetation capable of providing shade varies throughout Reach C. The west bank of the stream is bordered by an access road approximately 20 feet in width. Bank vegetation is comprised of a grass and legume mixture established following recent channel maintenance. The east bank is bordered by a wooded streambelt along approximately 70 percent of its length, the remainder being clean tilled cropland. Vegetation of the wooded streambelt is typical of the stands of wooded wetlands.

The five manmade main drainage laterals entering throughout the muck do not contain a fishery. Bank vegetation is near nonexistent due to the present maintenance program. Intermittent flows are often retained for irrigation purposes with complete drawdown occurring by the end of summer.

North of the muck land (Reach D), Flint Creek once again flows in a natural channel, portions of which are altered through the village of Gorham. The stream gradient is low, but riffles are apparent. Gravel bottoms replace the silt in the areas of faster flow. Aquatic vegetation is prominent and the stream is fairly well shaded by overhanging willows and a wooded streambelt. Water temperatures fall within the range of a warm water fishery but shallow depths and limited cover decrease suitability for game fish. Rough fish species occur at various levels of abundance in this reach.

Nettle Valley Creek, the only major tributary, supports a fair quality brown trout fishery. This fishery extends from its headwaters to Highway 364, at which point the stream becomes sluggish and water temperatures increase. Brown trout fingerlings are stocked annually at the rate of 200/mile. The stream contains a good pool riffle ratio (1:1) with a gravel bottom. Bank vegetation is well established, overhanging the stream, and provides good shade cover. Fallen trees and undercut banks provide instream cover. Stream size and low flows limit production. The creek chub is also a common species exerting competitive pressure.

The water in Flint Creek and its tributary streams is well suited for a wide variety of aquatic organisms. The pH values fall within the average unpolluted range of 6.5 to 8.5. The conductivity readings and sulfate values indicate a low to moderate level of mineral fertility above the muckland and moderate to high levels below the muckland. The increase in mineral levels appear to be correlated with low flows and the intensive agricultural use of the muckland and surrounding upland. High water temperatures limit trout survival and reproduction to the upper reaches.

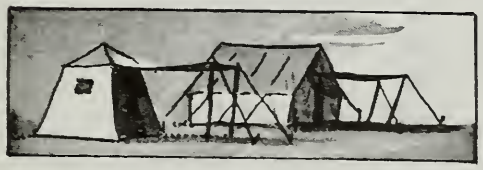
State purchased fishing rights have not been established within the area. Fishing by landowner permission, however, enables utilization of the existing trout fishery. (See Table M.) Utilization of nongame species such as bullheads and carp occurs within the warm water reaches. Minnow species of the stream are also utilized as bait by some local fishermen.

RECREATIONAL RESOURCES

New York State's Northwest Recreational Planning and Development Region (19) has an excellent recreational resource base. Five of its counties are located along Lake Erie and Lake Ontario, while four other counties contain parts of the Finger Lakes. The New York State Barge Canal System connects most of the inland urban areas. Letchworth, Niagara Falls, Chimney Bluffs, and Zoar Valley, are nationally significant scenic resources. Considerable open space acreage, some of which is devoted to farming, exists throughout the region. There are major limits to these resources. The Great Lakes beaches are generally short and backed by sharply rising cliffs, a condition that limits swimming and development of harbors of refuge for boaters. Further, water quality has often been marginal in recent years, access to shorelines is restricted because of private ownership, and many quality natural open space resources are unprotected from urban encroachment (Figure 14).

The northwest region is expected to grow from its current 2.5 million population to nearly 3 million by 1990, urbanizing many of the open spaces and agricultural areas now separating the Buffalo and Rochester metropolitan areas and other growing municipalities, such as Lockport, Tonawanda, Batavia, and Geneva.

Local recreation development consists of small county and town parks and local school yards.



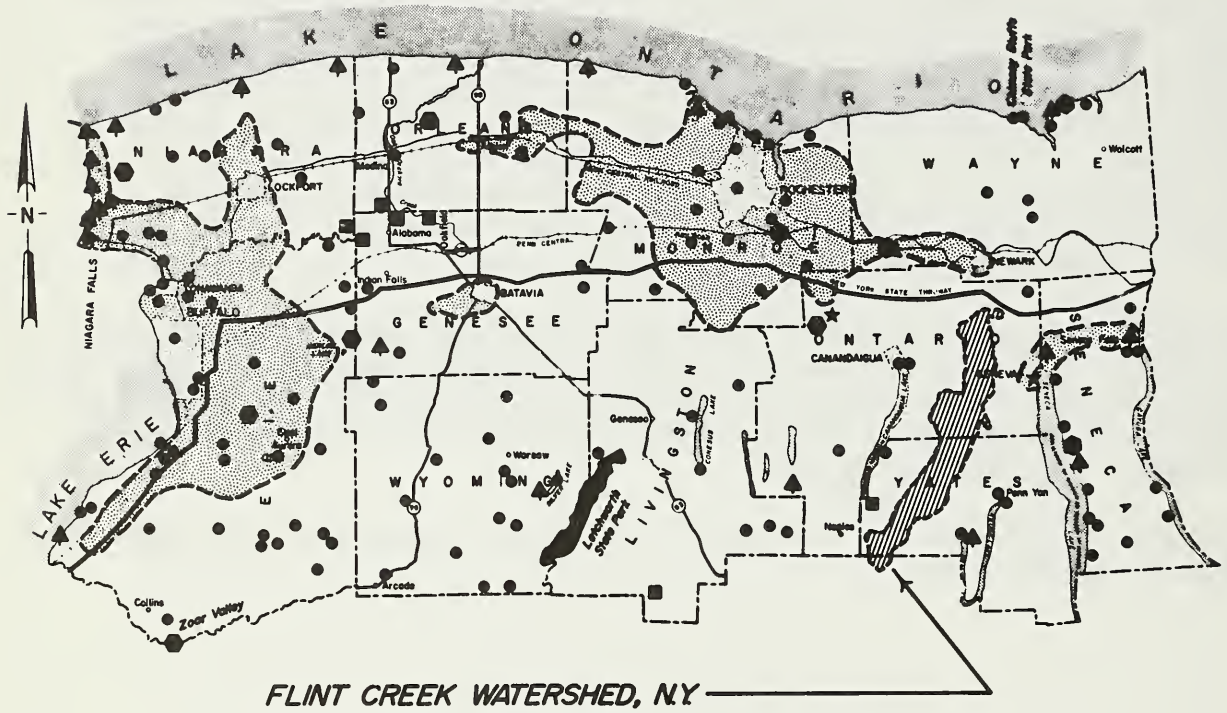


FIGURE 14- NORTHWEST RECREATIONAL PLANNING AND DEVELOPMENT REGION

ARCHEOLOGICAL, HISTORICAL, AND UNIQUE SCENIC RESOURCES

Investigations conducted by Peter P. Pratt, State University of New York at Oswego, and Marjorie K. Pratt, Ithaca College, indicates that there are no historical or archeological materials in the muckland area of the watershed. At the time of the survey (October 1974) two dam sites in the upper watershed were included in the tentative plan. Dr. Pratt's survey of these two areas revealed the possibility of several archeological sites worthy of consideration. Final formulation of the plan did not include these two dam sites, therefore these archeological sites will not be affected by this project.

The National Register of Historic Places lists no properties in the watershed such as historic districts, sites, buildings, structures, or objects which are significant in American History, architecture, archeology, or culture.

The New York State Office of Parks and Recreation, Division for Historic Preservation reports that the project will not affect buildings or structures of historic merit. There are no unique scenic areas within the watershed.

SOIL, WATER AND PLANT MANAGEMENT STATUS

Expected changes, over the next 25 years, in land use include open land formerly cropped and pastureland to be converted to cropland and other land at annual rates of 160 acres and 60 acres respectively. About 500 acres of open land formerly cropped will be converted to forest land.

TABLE N - FUTURE LAND USE (2000)

Land Use	Acres	Percent
Cropland		
Upland	35,705	55
Muck	1,695	3
Open land formerly cropped	0	0
Pastureland	900	1
Forest Land	21,500	33
Urban land	1,000	2
Other land	4,060	6
TOTAL	64,860	100

The Ontario, Steuben, and Yates County Soil and Water Conservation Districts have been conducting intensive conservation programs in their respective parts of the watershed. About 40 percent of the land area within the watershed is under district agreement. There are 180 district cooperators (25,455 acres) in the watershed, of which, 145 have conservation plans (21,397 acres). Approximately 35 percent of the planned practices on the cropland have been applied. Planned pasture management practices have been applied to about 10 percent of the pastureland.

"Land adequately treated" includes about 18,938 acres of cropland, 200 acres of pastureland, and 3,800 acres of urban and other land. Land adequately treated is defined as land on which all planned improvements have been applied. None of the forest land within the watershed is considered to be adequately treated.

It is estimated that 80 percent of the land in the watershed is adequately protected or that the annual soil loss is within tolerance limits for the soils occurring in the area. Land "adequately protected" is defined as land on which the soil, water, and related plant resources are adequately protected from deterioration, either naturally or by action of the land user.

Factors of production (land, labor and capital) are being inefficiently applied to about 445 acres of capability subclass VIe, 49 acres of VIs, 148 acres of VIw, and 154 acres of VIIe, cropland. About 6 acres of pasture in capability subclass VIIs and 18 acres in VIIIs are being inefficiently used.

Adequate forest fire protection is being provided by local volunteer fire departments and the New York State Department of Environmental Conservation in cooperation with the U. S. Forest Service through the Clarke-McNary Cooperative Forest Control Program. There have been no forest fires in the watershed during the last five years. State-Federal Cooperative Forestry Programs presently providing assistance in the area include Cooperative Forest Management (CFM) and Cooperative Forest Insect and Disease Control.

PROJECTS OF OTHER AGENCIES

There are no known water resource development project proposals by county, state, or federal agencies that will affect, or be affected by, proposed project measures.

WATER AND RELATED LAND RESOURCE PROBLEMS

LAND AND WATER MANAGEMENT

Approximately 13,279 acres of sloping cropland are subject to soil erosion. The average annual soil loss on these lands is about 11 tons per acre. Continuous row cropping is practiced on much of this land, resulting in water and nutrient losses.

There are about 6 acres of capability subclass VIIs and 18 acres of VIIIs pastureland that should have adjustments in land use. The steepness of slopes and/or the rocky conditions limit the application of management practices. Approximately 4,500 acres of capability subclass IIIw and 601 acres of IVw cropland need drainage or other water control measures to improve yields and increase efficiency of use. Drainage is needed on approximately 350 acres of muck and 1,000 acres of upland soils.

Wind erosion is damaging vegetable crops on the muckland during the spring when residues or crop cover is inadequate for soil protection.

Improper forest management and harvesting operations are damaging watershed conditions on 1,110 acres. Lack of adequate canopy or ground cover, woodland grazing, poor stand composition, and unprotected skid trails and logging roads are contributing to soil erosion, inadequate infiltration rates, and uneconomical operations.

FLOODWATER DAMAGE

Approximately 2,610 acres of muckland, including 1,695 acres of cropland and 915 acres of forest land, sustain floodwater damages due to out-of-bank flow. Beginning flood plain inundation occurs on the average of three times per year. Flood plain inundation during the growing season occurs on the average of once every 1.8 years. Major crops, such as onions, potatoes, corn (grain), carrots, beets, snap beans, lettuce, sweet corn and cabbage, are subject to severe damage during the growing season.

Major flooding occurred in 1972 during hurricane Agnes. However, greater total damages are recorded from storms of lesser magnitude but more frequent in occurrence. Spring runoff delays planting or causes the need for replanting. Crops of sod must be removed and destroyed because of weed seed infestation. Average annual net income is reduced about $149,600 by flooding. Income losses include increased production costs, decreased product quality, and decreased crop yields.

Flooding causes damage to drainage ditches, buildings, fences and machinery. Considerable expense is incurred for cleanup of debris after flooding. Agricultural damages of this type averages about $14,400 annually. Indirect flood damages caused from losses or interruptions of commerce, utilities, and employment are estimated at $16,400 annually.

About 10 farms, or about 35 people, sustain direct damage; however, nondirect floodwater damages to residences or businesses have been identified. (See Figure 15, Typical Flooding of the Muckland.) After a flood, the muckland requires an additional application of about 3,000 pounds of herbicide to control weed growth resulting from germination of weed seeds carried in by floodwater. An additional 22 tons of fertilizer is needed to replace that which is washed away by the floods.

EROSION AND SEDIMENT DAMAGE

Erosion, defined as the wearing away of land surface by running water, wind, ice, or other geological agents, is present throughout the watershed. Erosion occurs in the upland areas as a result of poor cover conditions, steep topography, cultural operations, and erosive soils.

Sheet erosion is the removal of a fairly uniform layer of soil from the land surface by runoff water (20). Sheet erosion rates by land use are shown in Table O. Total gross sheet erosion is estimated to be 191,548 tons, including 171,200 tons from cropland.

TABLE O - SHEET EROSION RATES BY LAND USE

Land Use	Tons/Acre/Year	Acres	Total Tons/Year
Cropland			
Adequately treated	1.32	18,938	24,998
Needing Treatment	11.01	13,279	146,202
Open Land Formerly Cropped	0.52	4,149	2,157
Pastureland	1.09	2,421	2,639
Forest Land	0.51	21,472	10,951
Urban Land	1.00	921	921
Other Land	1.00	3,680	3,680
Total		64,860	191,548

FLOODED ONIONS (HARVESTED)

FLOODED POTATOES (UNHARVESTED)

FIGURE 15 - TYPICAL FLOODING OF THE MUCKLAND

Moderate roadbank and streambank erosion occurs in localized situations. It is estimated that 422 miles of roadbanks are subject to erosion at an average annual rate of 13.32 tons per bank mile. Two hundred and twenty-two miles of streambank is subject to erosion at an average annual rate of 34.77 tons per bank mile.

The principal source of sediment is from sheet erosion. This represents approximately 94 percent of the total gross erosion in the watershed. Erosion on inadequately treated cropland accounts for 76 percent of the gross sheet erosion. The major factor contributing to the high erosion rate is inadequate management practices.

Wind erosion occurs on the muck where proper land treatment measures have not been applied to provide adequate protection. Individual soil particles strike young plants and cut off tender stalks and leaves. Windblown particles deposited on the leeward side of fixed objects smother plants. Fertilizers and pesticides attached to or absorbed by soil particles, are lost by wind erosion. Soil losses due to wind erosion are estimated at between 1/4 to 1/2 inch annually on fields that are not adequately protected.

Sediment, defined as the mineral and organic particles resulting from erosion, accumulates in the Flint Creek channel in the amount of approximately 1,700 cubic yards per mile per year. This sediment deposition reduces channel capacity, thereby increasing flooding potential. Sediment deposition in the channel is particularly evident where gravel bars have developed at the mouth of tributaries entering the channel.

Average annual sediment discharge at the mouth of the watershed is approximately 25,875 tons per year. This is equivalent to an average annual sediment concentration of 235 milligrams per liter. This average sediment concentration does not represent conditions that are present within the stream system throughout the entire year. Very high sediment concentrations occur during limited periods of spring runoff or intense summer storms. Sediment concentrations during the remainder of the year are very low due to limited flow. Downstream sediment damages related to sediment discharges were not evaluated.

Sediment deposition in the muckland laterals is almost entirely the result of wind erosion. Growers have found that frequency of cleanout of these laterals is dependent on the duration and intensity of the wind during periods when the muck is dry and not protected by vegetative cover. Deposition in the laterals is estimated to be 244 cubic yards per mile per year. The average annual cost for channel cleanout is estimated at $13,100.

Surface subsidence of muck soil is occurring as a result of soil shrinkage by oxidation and compaction and direct soil loss by erosion and burning. Shrinkage is increased with uncontrolled drainage. Lowering of the water table permits entry of air into the soil pores. Oxidation of the organic soil by action of aerobic bacteria converts such matter to carbon dioxide, which escapes into the atmosphere, and water. The removal of water by drainage causes the weight of upper soil layers to compact lower layers. The operation of farming equipment, in preparing and compacting seedbeds, consolidates surface layers by pulverizing aggregates of soil particles and eliminating larger soil voids.

Studies of density and mineral content of organic soils of the Northern United States (37), reflect that all soil losses took place above the water table. For average water table depths of 12 inches, 24 inches, and 36 inches, the annual subsidence rates for organic soils were about 0.1 inches, 0.6 inches, and 1.2 inches respectively. Average monthly water table levels in the Flint Creek muck were estimated from interviews with local growers, the New York State Extension Service, and Soil Conservation Service engineers and from water table records of observation wells. Average water table levels ranged from close to ground surface during February and March to four feet and greater below the muck surface during August and September. Correlating monthly water table levels with the corresponding subsidence rate, it was estimated that under present conditions the average subsidence rate of the Flint Creek muck is 0.6 inches per year.

As muck subsides its potential for crop production is decreased. Deep muck is ideally suited for production of vegetables such as lettuce, celery, carrots, and onions. As the depth of muck decreases the types of crops that can be grown become limited and the useful life of tile installed for water management is decreased. Added expense is incurred to replace tile which is no longer functional. Based on an estimated subsidence rate of 0.6 inches per year, an average annual net income loss of $24,300 is anticipated over the next 25 years due to induced shifts to lower value crops.

PLANT AND ANIMAL PROBLEMS

The waters of the upper reaches of Flint Creek are clear becoming turbid only during high flows. Silt deposition within these reaches is low and existing trout species are not greatly affected. Deposition throughout Reach C of Flint Creek however, (see Figure 13 for reach location), has reduced channel depth and retarded growth of aquatic vegetation which provides cover capable of supporting warm water game fish typical of the stream. Deterioration through sediment deposition has also occurred below the muck but is not as pronounced. Trout species do not occur in these areas of high sediment deposition.

Present trends of agriculture to maximum utilization and intensive cropping systems have been detrimental to the maintenance of high small game populations. The elimination of hedgerows and odd areas produces a need for escape and winter cover. Early mowing results in a high nesting mortality. Modern machinery, highly efficient in crop removal, has decreased grain residues which often serve as winter food sources for wildlife.

Conifers are deficient throughout the watershed. More conifer cover is essential in providing roosting, escape, and winter cover for a variety of wildlife.

Woodlot areas are presently in good balance in the watershed. Vegetive succession in the southern region on open land formerly cropped however, is closing existing openings essential for diverse wildlife production. Vegetation management is necessary to preserve softwoods, shrub growth, and grass strips.

Failure to keep the existing deer herd in balance with available forage causes deterioration of present plant communities. Sufficient numbers of surplus animals must be harvested annually. Utilization of the watershed for a winter yarding area emphasizes this need.

Grazing of woodlots for agricultural purposes decreases the plant communities' potential for wildlife habitat and timber production.

Wildlife marshes for use by waterfowl and as winter cover for pheasant are needed to increase production.

Basic habitat need of wildlife, as defined by the Division of Fish and Wildlife (Department of Environmental Conservation), and recommendations for improving habitat by species are shown in Table P.

TABLE P - NEEDS AND RECOMMENDATIONS
FOR IMPROVING WILDLIFE HABITAT

Species	Need	Recommendation
Waterfowl	Shallow marsh	Create large and small shallow water marsh areas
	Grassland nesting areas near marsh areas	Clear and seed part of marsh area borders to a grass-legume mixture
	Protection of nests from early season mowing destruction	Encourage mowing after broods hatch
Pheasants	Grassland nesting and feeding areas	Retain grassland areas by mowing
	Brushland wintering areas	Encourage maintenance of native brushlands by preventing encroachment of hardwood trees
	Cereal grains for winter food	Plant and leave standing corn and buckwheat, particularly adjacent to winter cover
	Protection of nests from early season mowing destruction	Encourage late season mowing
Cottontail Rabbits	Dense escape cover	Plant clumps, one acre blocks, or windbreaks of conifers adapted to site. Create brush piles
Deer	Maintenance of deer wintering area habitat	Release apple trees, maintain brushy areas, create slashings in suitable browse timber species and maintain grass-legume fields adjacent yard areas
Woodcock	Preservation of brushy swale areas	Maintain brushy areas
	Preservation of meadows adjacent to brushy swale areas	Maintain old meadows by mowing

ECONOMIC AND SOCIAL PROBLEMS

Approximately 60 percent of the Ontario and Yates County farms reported gross agricultural sales of less than $20,000 in 1969. Most of the farms are classified as family farms (29).

In the muck area, owners of small tracts rent their land to the ten farm operations. Each farm operation creates 1-1/2 or more man-years of employment annually. When flooding of the muck occurs, owners and operators experience substantial losses and hired labor is often forced to seek employment elsewhere. Part of the hired labor is provided by migrant workers.

A study conducted in 1969 indicated an unemployment rate of 7.1 percent for migrant workers and 1.1 percent for the general population of Ontario County. Additional data provided by the Genesee-Finger Lakes Regional Planning Board shows a median family income of about $3,750 for migrant workers versus $8,400 for the general population of the county. About 24.1 percent of migrant worker families live in substandard housing in contrast to 5.5 percent of the general population.

Flood damages on the muckland reduces agricultural labor requirements by about 6 man-years annually.

RELATIONSHIP TO LAND USE PLANS, POLICIES AND CONTROLS

There are no known approved or proposed federal, state, or local land use plans which will conflict with the proposed project measures. The proposed project measures conform with the objectives of the Clean Air Act and the Federal Water Pollution Control Act Amendments of 1972. This watershed was considered as an "early action" project under the Type IV Oswego River Basin Study. The implementation of this plan conforms with the objectives of the Basin study.

ENVIRONMENTAL IMPACT

CONSERVATION LAND TREATMENT

The installation of vegetative and structural types of land treatment measures will effectively reduce runoff, conserve soil moisture, reduce flood damages by 3 percent, and reduce losses of topsoil. Erosion rates on about 13,279 acres of erosive upland cropland will be reduced from 11.0 tons per acre to less than 5.5 tons per acre. The alleviation of erosion on cropland will reduce losses of fertilizer and other agricultural chemicals, as well as crop losses caused by erosion. Annual quantities of sediment delivered to the mouth of the watershed will be reduced from 25,875 to 16,368 tons. Sediment concentrations at the mouth will be reduced from 235 mg/l to 149 mg/l. The planting of 540 acres of trees will speed the succession of open land formerly cropped to forest cover and provide wildlife cover.

Total gross sheet erosion will be reduced from 191,548 tons to 92,521 tons annually or 52 percent. Sheet erosion on inadequately treated cropland will be reduced from 146,202 tons to 47,175 tons or about 68 percent. Wind erosion on the muck will be reduced by about 50 percent; therefore, wind deposited sediment in the laterals will be reduced from about 244 cubic yards to 120 cubic yards per mile per year.

Land treatment measures will enable landowners to better implement sound land management plans and increase efficiencies of production. The implementation of conservation farming practices will increase the carrying capacity of existing wildlife habitat. Income would be increased to about 10 muckland farm families, or about 35 people.

STRUCTURAL MEASURES

The area to be benefited by the installation of the combined program of land treatment and structural measures is delineated on the project map, Appendix B. Installation of structural measures will reduce annual floodwater damages to crops by 70 percent. Control of the water level in the muck, by the structures for water control, will reduce the subsidence rate from an estimated 0.6 inches per year to 0.35 inches per year. Crop yields will be increased, wind erosion will be reduced, and the life of the drainage system will be increased. It is estimated that reduction of the subsidence rate will increase the life of the muck resource by 40 percent.

Damages to the 1,695 acres of cultivated muckland will be eliminated from annual storms up to the 2-year frequency event with some flooding remaining from storms of greater magnitude. (See Table Q.) Because 45 to 55 percent of the discharge of Flint Creek occurs during March and April, in an average year, protection will initially be provided to growing agricultural crops from storms up to the 10-year frequency event. Due to muck subsidence the level of protection provided during the growing season will decrease from a 10-year to an 8-year frequency event by the end of the project life.

About 10 muckland farms and about 35 people will receive direct floodwater reduction benefits. Reductions in indirect flood damages will benefit the watershed area by reducing interruptions of utilities and commerce.

The level of protection will be adequate for intensive agricultural production, but is not adequate for urban development. The production of major crops on the muckland, such as onions, potatoes, corn (grain), carrots, beets, snap beans, lettuce, and sweet corn will be continued.

TABLE Q - AREA FLOODED

Frequency	Annual Series 1/		Growing Season Series 2/	
	Without Project	With Project	Without Project	With Project
(Years)	(Acres)	(Acres)	(Acres)	(Acres)
2	1,910	0	0	0
5	2,150	1,446	1,580	0
10	2,270	1,640	1,900	0
25	2,420	1,740	2,120	1,290
100	2,610	1,870	2,400	1,720

1/ Annual Series - A storm analysis based on the maximum event which occurred each year, no matter what time of the year it occurred.

2/ Growing Season Series - A historical storm analysis based on the maximum event which occurred each year during the growing season.

The alleviation of muckland flooding will reduce annual applications of fertilizer by 22 tons and annual applications of herbicides by 3,000 pounds. The planned structural measures will reduce the discharge of nutrients and toxic agricultural wastes from the watershed. Through better flood control and agricultural practices, these potential pollutants will tend to remain associated with the land, to be reduced into nontoxic substances or be utilized by plants.

During the period of construction, there will be normal inconveniences of noise and dust pollution from construction equipment and the need for detours around construction areas. A short term increase in sediment rates downstream may be observed as a result of runoff during construction. Control requirements specified in contracts and enforced during construction will hold noise, dust. erosion, and sedimentation and similar pollution to a minimum.

TABLE R - AREA FLOODED - POTTER TO CANANDAIGUA OUTLET

Reach	Freq. (years)	Without Project Area Flooded (acres)	With Project Area Flooded (acres)	Net Change in Area Flooded (acres)
Potter to Gorham	2	1910	0	-1910
	10	2270	1640	- 630
	100	2610	1870	- 740
Gorham to Lake to Lake Road	2	4	18	+ 14
	10	19	24	+ 5
	100	24	28	+ 4
Lake to Lake Road to Tileyard Road	2	78	144	+ 66
	10	150	203	+ 53
	100	204	256	+ 52
Tileyard Road to Route 5 and 20	2	11	24	+ 13
	10	27	41	+ 14
	100	49	55	+ 6
Route 5 and 20 to Newark Reservoir Trib.	2	66	97	+ 31
	10	116	128	+ 12
	100	140	150	+ 10
Newark Reservoir Trib. Canandaigua Outlet	2	58	88	+ 30
	10	127	144	+ 17
	100	172	180	+ 8
TOTAL	2	2127	371	-1756
	10	2709	2180	- 529
	100	3199	2539	- 660

Changes in area flooded as a result of the project are illustrated in Table R. Flooding on the muckland will be reduced from 2,610 acres to 1,870 acres for the 100-year frequency event and from 1,910 acres to zero for the 2-year frequency event.

Flooding below the railroad at Gorham to the Canandaigua Outlet will be increased from 589 acres to 669 acres as a result of the project. Land use in the defined flood plain between Gorham and the Canandaigua Outlet is estimated to be approximately 80 percent woods and pasture and 20 percent cultivated cropland. The area with the greatest increase in area flooded lies between Lake to Lake Road and Tileyard Road where 40 to 50 percent of the land within the defined "with project" flood plain is under cultivation. Major crops grown in this area include corn, cabbage, timothy, and small grains.

The increased flooding from Tileyard Road to Phelps is relatively insignificant. The 24 acre increase is equivalent to an average flood plain width of approximately 14 feet. Land use in this area is predominantly forest and pasture with some cropland. There are no identified induced damages to roads, rural residences or buildings, or urban properties.

TABLE S - LAND USE AND HABITAT CHANGES DUE TO CHANNEL MODIFICATION

Channel			Area for Instal-	Land Use and Wildlife Habitat			
Location	Length (Mi.)	Condition	lation (Ac.)		Present (Ac.)	Future (Ac.)	Change (Ac.)
Potter to Railroad	9.1	Modified	126	Forest Land	6	0	-6
				Cropland	77	70	-7
				Grassland	0	6	+6
				Channel	21	28	+7
				Travelway	22	22	0
Nettle Valley Creek	1.6	Modified	15	Grassland	7	6	-1
				Channel	4	5	+1
				Travelway	4	4	0
Laterals	8.0	Manmade	97	Forest Land	7	0	-7
				Cropland	76	55	-21
				Grassland	0	4	+4
				Channel	14	19	+5
				Travelway	0	19	+19

About 18.7 miles of channel will be subject to modification, with construction generally following existing channel alignment. Perennial weeds on the banks, and cattails and other emergent aquatics in the channel, will be eliminated by channel work. This vegetation will be replaced by seedings of perennial grasses and legumes that will be maintained and will be usable as nesting cover for songbirds and waterfowl. Muskrat activity in the channel will be temporarily disturbed during construction and operation and maintenance activities. About 238 acres of land will be committed to the channel system during construction of the project. Following construction, about 16 acres will be maintained in grasses and legumes, 125 acres of cropland, 52 acres for the conveyance of water, and 45 acres will be used for travelways and maintenance roads. (See Table S.)

Construction of structural measures will eliminate 28 acres of cropland, one acre of grassland, and 13 acres of forest land. The cropland area produces an estimated $13,800 of annual net income.

Channel work will alter approximately 42 acres of wildlife habitat as listed in Table S. Channels to be disturbed include Reach C, the five main drainage laterals, and the lower portion of Nettle Valley Creek, as defined in Table M.

Destruction of within channel vegetation during construction will cause displacement of herbivores or first level consumers (i.e. muskrats, woodchucks, rabbits, and birds). The reduction in numbers of herbivores will cause losses in numbers of carnivores or second level consumers (i.e. foxes, mink, birds of prey, and domestic dogs and cats). The second level consumers will prey more heavily on the insectivores (i.e. fish, reptiles, amphibians, and birds) which are maintained by plankton production. As vegetation is restored, through revegetation of the channels, numbers of herbivores and subsequently numbers of carnivores will be restored.

ECONOMIC AND SOCIAL

The project will help to stabilize agricultural income by installation of structural measures. Muckland farm operators will be better able to manage their land, labor, and capital when flood damages and associated uncertainties are reduced.

Per capita income in the watershed will be increased about $56 as a result of increased agricultural income. Average net income of the 10 muckland farms will be increased about $13,100 annually. This will encourage their continued existence and will help to reduce the migration of rural people to urban areas. Increased income of the farm laborers and increases in the tax base will help provide revenue to reduce deficiencies in needed services.

Project measures will yield estimated "secondary" benefits or indirect effects of $101,900 annually. These benefits represent increased net returns resulting from economic activity stimulated by production, utilization, and disposition of intermediate goods (increased crop production). The national (agricultural) income multiplier of 2.13 used was developed by utilizing an input-output analytical system.

Increased agricultural production will create about 4 man-years of additional employment annually. This increased employment will help alleviate the chronic unemployment and underemployment problems of the migrant farm laborers. Increased income for the farm laborers will help reduce the gap between the living standards of the farm labor families and the general population. Construction of structural measures will create about 40 man-years of employment.

FAVORABLE ENVIRONMENTAL IMPACTS

1. Agricultural flood damage from growing season storms up to the magnitude of the 8-year frequency event will be eliminated on the 1,695 acres of cultivated muckland.

2. Direct flood prevention beneficiaries include about 35 persons and 10 farm enterprises.

3. Annual agricultural floodwater damages will be reduced by 73 percent.

4. Reductions in indirect flood damages by 73 percent will benefit the watershed area by reducing interruptions of utilities and commerce.

5. Annual erosion rates on about 13,279 acres of erosive upland cropland will be reduced from 11.0 tons per acre to less than 5.5 tons per acre.

6. Total gross sheet erosion will be reduced from 191,548 tons to 92,521 tons annually, or 52 percent.

7. Sheet erosion on inadequately treated cropland will be reduced from 146,202 to 47,175 tons, or about 68 percent.

8. Losses of fertilizer and other agricultural chemicals and losses of crop production, caused by erosion, will be reduced.

9. Annual quantities of sediment delivered to the mouth of the watershed will be reduced from 25,875 to 16,368 tons.

10. Sediment concentration at the mouth will be reduced from 235 mg/l to 149 mg/l.

11. Wind erosion on the muck will be reduced by about 50 percent; therefore, wind deposited sediment in the laterals will be reduced from about 244 cubic yards to 120 cubic yards per mile per year.

12. The planting of 540 acres of trees will speed the succession of open land formerly cropped to forest cover and provide wildlife cover.

13. Control of the water level in the muck, by the structures for water control, will reduce the subsidence rates by 0.25 inches per year. Wind erosion will be reduced and the life of the drainage system will be increased.

14. Land treatment measures will enable landowners to better implement sound land management plans and increase efficiencies of production.

15. Major crops raised on the muckland such as onions, potatoes, sod, beets, corn (grain), snap beans, carrots, lettuce, and sweet corn will continue to be raised.

16. The alleviation of muckland flooding will reduce annual applications of fertilizer by 22 tons and annual applications of herbicides by 3,000 pounds.

17. The discharge of nutrients and toxic agricultural wastes from the watershed will be reduced.

18. Seeding of 142 acres of channel banks to perennial grasses and legumes that will be usable as nesting cover by songbirds and waterfowl.

19. The project will help stabilize agricultural income.

20. Muckland farm operators will be better able to manage their land, labor, and capital when flood damages and associated uncertainties are reduced.

21. Per capita income in the watershed will increase about $56 as a result of increased agricultural income.

22. Average net income of the 10 muckland farms will be increased about $13,100 annually. This will encourage their continued existence and help to alleviate the migration of rural people to urban areas.

23. Increased agricultural production will create about 4 man-years of additional employment annually.

24. Increased employment will help alleviate the chronic unemployment and underemployment problems of the migrant farm laborers.

25. Increased income for farm laborers will help reduce the gap between the living standard of the farm labor families and the general population.

26. Increased incomes of the farm laborers and an increase in the tax base will help alleviate deficiencies in needed services.

27. Construction of the structural measures will create about 40 man-years of employment.

28. The installation of 100 acres of harvest cutting and 170 acres of timber stand improvement on forest land will provide additional wildlife browse.

29. The implementation of conservation farming practices will increase the carrying capacity of existing wildlife habitat.

ADVERSE ENVIRONMENTAL EFFECTS

1. Construction of structural measures will alter wildlife habitat associated with 28 acres of cropland, one acre of grassland, and 13 acres of forest land. The cropland area produces an estimated $13,800 of annual net income.

2. During the period of construction, there will be the normal inconveniences of noise and dust pollution from construction equipment and the need for detours around construction areas.

3. A short term increase in sediment downstream may be observed as a result of runoff during construction.

4. An increase of 80 acres between Gorham and the Canandaigua Outlet will be subject to flooding by the 100-year event. This is equivalent to an average net increase of flood plain width of about 40 feet. The area estimated to be flooded by a 2-year frequency storm with the project in place is now flooded on the average of once every 3 years. The area which will be subject to flooding by a 10-year frequency event is now flooded on the average once every 30-years.

5. The elimination of perennial weeds on the banks, and cattails and other emergent aquatics in the channel by construction, will remove this type of habitat for aquatic and terrestrial species.

6. Muskrat activity in the channel will be temporarily disturbed during construction.

7. Planting of trees on open land formerly cropped will speed the rate of plant succession to forest wildlife cover, with a resulting loss of open land wildlife habitat.

8. A temporary reduction in fishing caused by increased turbidity during construction will occur. Only nongame species will be affected.

ALTERNATIVES

Alternatives to the project are divided into four categories: land treatment, nonstructural measures, structural measures, and no project. Many combinations of these categories are possible, including some which are not realistic. During the evaluation of alternatives, those which proved to be unworkable, or impossible, were not explored further.

Land Treatment

This alternative would provide accelerated technical assistance to review and make needed revisions of conservation and woodland plans; to maintain existing cover, which is adequate; to install essential land treatment measures; and to plan and apply land treatment measures applicable to land areas which require treatment. Estimated cost for installation of land treatment measures is about $700,000.

Land treatment would apply to all of the lands in the watershed. Conservation measures would be applied on cropland, pastureland, forest land, and other land, as described under the "Works of Improvement to be Installed" section.

This alternative would cause the following impacts:

1. About 3 percent reduction of floodwater damage and about 24 percent reduction of sediment damage on 2,610 acres of muckland.
2. Income would be increased for about 10 muckland farm families, or about 35 people.
3. Total gross sheet erosion will be reduced from 191,548 tons to 92,521 tons annually, or about 52 percent.
4. Sheet erosion on the inadequately treated cropland will be reduced from 146,202 tons to 47,175 tons, or about 68 percent.
5. Wind erosion on the muck will be reduced about 50 percent.
6. Wind deposited sediment in the muck laterals will be reduced from about 240 cubic yards to 120 cubic yards per mile per year.
7. Annual quantities of sediment delivered to the mouth of the watershed will be reduced from 25,875 to 16,368 tons.
8. Sediment concentration at the mouth will be reduced from 235 mg/l to 149 mg/l.

9. Reduction of stream pollution from agri-nutrients and agri-chemicals sorbed by sediment.

This alternative alone would not meet all the objectives of the Sponsors, but would preclude the following identified impacts of the selected alternative:

1. Construction of structural measures will alter wildlife habitat associated with 28 acres of cropland, one acre of grassland, and 13 acres of forest land. The cropland produces an estimated $13,800 of annual net income.

2. During the period of construction, there will be the normal inconveniences of noise and dust pollution from construction equipment and the need for detours around construction areas.

3. A short term increase in sediment downstream may be observed as a result of runoff during construction.

4. About 18.7 miles of channel will be subject to modification, with construction generally following existing channel alignment.

5. The elimination of perennial weeds on the banks, and cattails and other emergent aquatics in the channel by construction, will remove this type of habitat for aquatic and terrestrial species.

6. Muskrat activity in the channel will be temporarily disturbed during construction.

Land Treatment and Two Floodwater Retarding Structures

This alternative consists of accelerated land treatment, and two floodwater retarding structures. This alternative has an estimated cost of about $6,000,000 and would cause the following impacts:

1. Fourteen percent reduction of floodwater damage on 2,610 acres of muckland.

2. Income would be increased for about 10 farm families.

3. Construction activities would create 240 man-years of employment.

4. About 10,000 feet of natural channels would be eliminated by the construction of the floodwater retarding structures.

5. About 180 acres of land; consisting of 60 acres of forest land, 100 acres of pasture and 20 acres of cropland, would be changed to maintained grasses and legumes, as a result of the construction of the floodwater retarding structures.

6. Limited short term increases in sediment rates and in air pollution would occur during construction of structural measures.

7. Short term loss of wildlife habitat would occur during construction.

8. About 490 acres of land consisting of 135 acres of forest land, 184 acres of pastureland, 43 acres of Type 6 wetland, and 128 acres of Type 7 wetland, would be subject to temporary flooding in the floodwater retarding pools.

The land treatment would be the same as that discussed under "Land Treatment." The same costs and effects would be applicable. This alternative would not meet the sponsors objectives. The adoption of this alternative alone would preclude all but the land treatment impacts of the selected alternative.

Land Treatment, Floodwater Retarding Structures, Grade Stabilization Structures, and Channel Work

This alternative consists of accelerated land treatment; 2 floodwater retarding structures, with no permanent water stored; 2 grade stabilization structures; and about 18.7 miles of channel work consisting of deepening and enlarging existing channels in the muckland.

This alternative has an estimated cost of $7,300,000 and would cause the folloing impacts:

1. Ninety-two percent reduction of floodwater damage (control flooding up to the 10-year event) on 2,610 acres of muckland.

2. Income would be increased for about 10 farm families.

3. Wildlife habitat along the channels would change from weeds and brush to grasses and legumes.

4. About 10,000 feet of natural channels would be eliminated by the construction of the floodwater retarding structures.

5. About 180 acres of land consisting of 66 acres of forest land, 100 acres of pastureland, and 20 acres of cropland, would be changed to maintained grasses and legumes, as a result of the construction of the floodwater retarding structures.

6. About 490 acres of land; consisting of 135 acres of forest land, 184 acres of pastureland and cropland, 43 acres of Type 6 wetland, and 128 acres of Type 7 wetlands, would be subject to temporary flooding in the floodwater retarding pools.

7. Limited short term increases in sediment rates and in air pollution would occur during construction of structural measures.

8. Short term loss of wildlife habitat during construction.

9. Construction activities would create abour 250 man-years of employment.

The land treatment would be the same as that discussed under "Land Treatment." The same costs and effects would be applicable. This alternative would meet the Sponsors' objectives. The adoption of this alternative alone would not preclude any impacts of the selected alternative.

No Project

The No Project alternative would not make any changes in the existing environment. The watershed would essentially remain as outlined in the "Environemntal Setting" section of this report, except that going Land Treatment would be continued. It would still be plagued with the problems which led to the initiation of this project; however, the soil conservation districts' ongoing programs would continue. Both the adverse and favorable effects of the selected project measures would be eliminated. Flood damage reduction and secondary benefits would be foregone. Net average annual monetary benefits foregone would total $110,200.

SHORT TERM VS. LONG TERM USE OF RESOURCES

The most obvious trend in land use change is that of open land formerly cropped and pastureland being converted to cropland. The following table summarizes the present and expected future land use (2000). Anticipated future land use will not be influenced by installation of the project.

TABLE T - PRESENT AND FUTURE LAND USE (2000)

Land Use	Present Use		Future Use	
	(Acres)	(Percent)	(Acres)	(Percent)
Cropland - Upland	30,522	47	35,705	55
Muck	1,695	3	1,695	3
Open Land Formerly Cropped	4,149	6	0	0
Pastureland	2,421	4	900	1
Forest Land	21,472	33	21,500	33
Urban Land	921	1	1,000	2
Other Land	3,680	6	4,060	6
TOTAL	64,860	100.0	64,860	100.0

Structural measure installation will restrict options for future use on land to be occupied by the channels, or about 0.3 percent of the watershed. On the remaining 99.7 percent, opportunities for productive use will be maintained or enhanced.

This project is designed to meet the immediate need for flood prevention and to continue to satisfy the need, with adequate maintenance, for at least 25 years. The plan is compatible with the long term uses of the natural resources, and will mesh readily with known water and related land resource plans of a wider scope.

The work plan was reviewed by appropriate state and federal agencies and is compatible with other water resource projects in the region. The Flint Creek Watershed is located in the Oswego River Basin. The watershed was not studied under the Type IV Comprehensive Study of the Oswego River Basin; the proposed project will not contravene the objectives and purposes of this study. The study identified six potential watershed projects. There are two other P.L. 566 watershed projects in the Basin (Higinbotham Brook and Cowaselon Creek).

Accumulative effect, outside the watershed, is the reduction of sediment delivered to the mouth of the watershed by 9,360 tons annually.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The structural measures will occupy approximately 97 acres of land. An additional 141 acres will be temporarily committed to the structural measures through installation of the selected plan. The existing facilities occupy 45 acres. See Table S for details of land use changes.

Other commitment of resources includes labor, materials, and energy required for construction of the project.

CONSULTATION AND REVIEW WITH APPROPRIATE AGENCIES AND OTHERS

GENERAL

The Sponsoring Local Organizations and the Soil Conservation Service encouraged the participation of interested public agencies and the general public in the planning process by keeping them informed of planning progress and providing them with forums to discuss their respective concerns. The diverse interests expressed by the public agencies and private citizens were considered in the formulation of the project.

The Ontario County Board of Supervisors, the Yates County Board of Supervisors, the Ontario County Soil and Water Conservation District, the Yates County Soil and Water Conservation District, and the Steuben County Soil and Water Conservation District filed an application for assistance under P.L. 566 in June 1961. The Division of Water Resources, New York State Conservation Department, approved the application in July 1961. The Soil Conservation Service Administrator authorized planning in August 1961.

A number of coordination meetings involving representatives from the U.S. Fish and Wildlife Service, the New York State Department of Environmental Conservation, the Soil Conservation Service, the Sponsoring Local Organizations, and interested persons were held during project formulation to assess potential environmental issues.

Articles concerning Flint Creek Watershed problems have appeared in such news media as the "Canandaigua Daily Messenger," the "Rochester Democrat and Chronicle," and the Soil and Water Conservation District Newsletters." A four page pamphlet, distributed by the Yates, Ontario, and Steuben Counties Soil and Water Conservation District Boards of Supervisors, describes problems, potential remedial measures, costs, and benefits for the Flint Creek project.

Several alternatives were evaluated during planning in order to determine a feasible plan acceptable to the Sponsors. Representatives of the Soil Conservation Service presented physical and economic data relative to these alternatives to the Sponsors and other interested agencies, groups, and individuals as they were developed.

The planning of this watershed has been coordinated with the New York State Office of Parks and Recreation regarding historical and archeological investigations. The New York State Museum and Science Service recommended that an investigation of specific areas to be disturbed be made by an archeologist prior to completion of the work plan. This

survey was completed in November 1974. The National Register of Historic Places was reviewed to confirm that no properties in the watershed were listed which are significant in American history, architecture, archeology or culture.

Personnel of the U.S. Fish and Wildlife Service, U.S. Department of the Interior, and the New York State Department of Environmental Conservation have made several reconnaissances of the project area with Soil Conservation Service personnel to coordinate the fish and wildlife aspects of the project. The Environmental Protection Agency has provided an assessment of water quality, and advised Soil Conservation Service personnel during project formulation.

The Type IV River Basin Study, coordinated by the New York State Department of Environmental Conservation, has been completed for the Oswego River Basin. The USDA Report for that basin indicates that Flint Creek should be considered for early action project installation (by the year 1980).

The following agencies were asked to comment on the draft statement:

Department of the Army
Department of Commerce
Department of Health, Education, and Welfare
Department of the Interior
Department of Transportation
Office of Equal Opportunity - USDA
Environmental Protection Agency
Advisory Council on Historic Preservation
Federal Power Commission
Great Lakes River Basin Commission
New York State Department of Environmental Conservation
New York State Office of Planning Services
Genesee-Finger Lakes Regional Planning Board
National Audubon Society
Natural Resources Defense Council
International Joint Committee
Friends of the Earth
Environmental Defense Funds
National Wildlife Federation
Environmental Impact Assessment Project
Ontario County Planning Board
Ontario County Environmental Management Council
Town of Seneca Planning Board
Town of Gorham Planning Board
Elizabeth B. Rugar, Citizen-Taxpayer

DISCUSSION AND DISPOSITION OF EACH COMMENT ON DRAFT ENVIRONMENTAL STATEMENT

No response was received during the review of the draft Environmental Impact Statement from the following agencies:

Department of Commerce
Advisory Council on Historic Preservation
Federal Power Commission
Great Lakes River Basin Commission
New York State Office of Planning Services
National Audubon Society
Natural Resources Defense Council
International Joint Committee
Friends of the Earth
Environmental Defense Fund
National Wildlife Federation
Environmental Impact Assessment Project

Comments were received from the following:

Department of the Army
Department of Health, Education, and Welfare
Department of the Interior
Department of Transportation
Office of Equal Opportunity - USDA
Environmental Protection Agency
New York State Department of Environmental Conservation
Ontario County Environmental Management Council
Town of Seneca Planning Board
Town of Gorham Planning Board
Elizabeth B. Rugar, Citizen-Taxpayer
Genesee/Finger Lakes Regional Planning Board, Natural Resources Committees

Each issue, problem, or objection is summarized and a response given on the following pages. Comments are serially numbered where agencies have supplied multiple comments. The original letters of comment appear in Appendix C.

DEPARTMENT OF THE ARMY

(1) Comment: We have reviewed the work plan and foresee no conflict with any project or current proposal of this Department. The draft environmental impact statement satisfies the requirements of Public Law 91-190, 91st Congress, insofar as this Department is concerned.

Response: Noted.

DEPARTMENT OF HEALTH, EDUCATION AND WELFARE, PUBLIC HEALTH SERVICE, FOOD AND DRUG ADMINISTRATION

(1) Comment: Appendix F, pp. F-1 to F-6. Flint Creek Water Quality Survey. Is the purpose of this study to provide base-line data to document changes in water quality after implementation of the Watershed Project? If so, then it should be noted that the data presented in the survey do not reflect seasonal variations that might occur in water quality due to agricultural activity and climate. The following water quality parameters could show seasonal variation:

(1) Dissolved oxygen concentration, which decreases in warm weather due to the lowered solubility of oxygen in water.

(2) Dissolved and suspended solids might be expected to increase during periods of agricultural activity.

(3) Nutrient levels (N & P) in the water might be expected to increase during spring and summer due to application of fertilizer on nearby farmland.

(4) Pesticide and herbicide concentrations might increase in waterways during the growing season when they are regularly being applied to crops.

Response: The purpose of the study was not to document changes in water quality after implementation of the project, but rather to provide confirmation of the suspected water quality in the channel. A statement was added on page F-3 to indicate that data does not reflect seasonal variations.

(2) Comment: Improved base-line data would allow the sponsoring agency to document the effectiveness of the proposed land treatment measures in controlling sediment and pollutant contamination of the waterways after the project is completed. It is suggested that samples for water quality be taken during summer low flow and summer normal flow conditions to better document pre-project water quality.

Response: As pointed out on Pg. II-58, decreased flooding of the muck will result in less use of herbicides and fertilizers. This will, of course, have a net positive effect on the water quality in the reach downstream from the muck. Aquatic resources for Reach D are marginal (see Page II-39).

UNITED STATES DEPARTMENT OF THE INTERIOR

(1) Comment: Environmental impacts related to geologic conditions have been adequately considered in the draft environmental statement and work plan. However, we suggest that the following statements be clarified: (1) "the primary soil and water resource problem is periodic inundation of high value vegetable crops on about 1,695 acres of muckland" (page I-1, paragraph 2); and (2) "the primary soil and water resource problem is about 2,610 acres of muckland, including 1,695 acres of cropland, subject to periodic inundation" (page II-14, paragraph 3). It would be more understandable to state that the primary problem is periodic floodwater damage on 2,610 acres of flood plain underlain by organic muck, of which 1,695 acres are cultivated.

Response: The wording on Page II-14, paragraph 3 was changed as suggested.

(2) Comment: Page I-2, Paragraph 2, Last Sentence. "Indirect flood damages will be derived by reducing interruptions of utilities and commerce." This sentence is difficult to understand, and should be clarified.

Response: The discussion of indirect flood damage benefits was changed on page I-2 as follows: "Indirect flood damage reduction benefits will be derived by reducing interruptions of utilities and commerce.

(3) Comment: Page I-16, Structural Measures No. 3, Grass Mowing. The time of mowing can be influential to pheasant and waterfowl-nesting success; early mowing will be detrimental. The plan should specify the time of year for mowing; after June would be preferable.

Response: An operation and maintenance agreement between the Soil Conservation Service and the Watershed Protection District will be executed for all structures prior to the signing of a project agreement. (See page I-17.) Through consultation with the wildlife biologist, a plan of channel maintenance will be developed that will minimize the effects on the identified wildlife species. Methods such as selective or timely mowing will be employed to provide the greatest diversity of habitat for adaptable species in the area.

(4) Comment: Page I-24, Objectives, Paragraph 2. "Providing fish pond management" is listed as one objective; however, no mention of this is made in the plan's sections relating to formulation, implementation, or effects. This information should be stated in the work plan and environmental statement.

Response: Information concerning fish pond managment is found on page II-5, paragraph 2.

(5) Comment: Another objective listed is "Providing wildlife watering facilities." This objective receives additional mention under "Formulation," but it is not mentioned anywhere else. With the abundance of water in the watershed and the normal precipitation regime, it is doubtful that this is an important objective. Further clarification is desired.

Response: All references to "providing wildlife watering facilities" has been removed from the Plan and the EIS.

(6) Comment: Under Paragraph 3, the objective "preserving areas of natural scenic beauty, such as weltands" is listed. It could be argued that wetlands are not scenic. Some areas, such as flooded wood lots containing exposed mud flats and dead or dying trees and stumps, might be considered unsightly and unpleasantly odorous. Preserving wetlands, however, is laudable and deserves mention. Hence, it would seem more logical to list this Objective under Paragraph 2, "Enhancing or maintaining

quality and quantity of fish and wildlife habitat." Wetlands are used primarily as important fish and wildlife habitats and to provide watershed protection.

Response: The words "such as wetlands" were deleted from paragraph 3.b on page I-24. Enhancing or maintaining wetland habitat was already a part of paragraph 2.

(7) Comment: Coordination, Page I-25, Paragraph 4. The Bureau of Sport Fisheries and Wildlife should be changed to read, "U.S. Fish and Wildlife Service."

Response: "The Bureau of Sport Fisheries and Wildlife" has been changed to read "U.S. Fish and Wildlife Service" on pages I-25 and II-74.

(8) Comment: With reference to the objectives of the "Environmental Quality Plan" on Page I-24, there is little mention of fish and wildlife related objectives in the "Formulation" section. It is suggested that the second sentence in Paragraph 4 be changed to read, "These practices include, but are not necessarily limited to, planting grasses, legumes, and shrubs; mowing; maintaining a diversity of habitat; and managing valuable wildlife food plants."

Response: Changes made as suggested.

(9) Comment: This section (The Abbreviated Environmental Quality Plan), indicates that implementation of the "Environmental Quality Plan" would cause certain impacts which are listed. Although there are ten objectives listed on Page I-24 under "Fish, Wildlife, Scientific and Scenic" headings, and six objectives for providing watershed protection, only the watershed protection measures are listed as having any impact. If the others have no effect or impact, there is not much point in listing them as objectives.

Response: The environmental objectives reflect man's concern with the quality of the natural physical-biological system in which all life is sustained. The land treatment phase of the plan (watershed protection measures) includes practices which, as an incidental effect, will meet many of the objectives listed under the "Fish, Wildlife, Scientific, and Scenic" headings. These effects are not included in the "Effects and Impacts" section.

(10) Comment: Page I-33. Under "Measures of Effects" no mention is made of the changes that will occur in the discharge peaks in areas anticipated to be inundated downstream from the construction area, especially between Lake to Lake Road and Tile Yard Road (refer to Tables Q, R, and S in Part II, Pages II-58, 59, and 60). Evidently, it is assumed that no effects will occur; however, since 62 acres will be subject to flooding by the two-year frequency event, it is indicated that there will be fish and wildlife habitat alteration on a fairly regular basis. The effects may be minor, but they should be addressed.

Response: One of the adverse environmental effects of the project is increased flooding downstream from Gorham (see page II-64). Fish and wildlife species whose ecosystem includes the present defined flood plain experience habitat alteration on a fairly regular basis under existing conditions. With the project in place, the frequency of disturbance from flooding will be increased. Acres affected for the 2,10, and 100-year events are listed in Table R.

(11) Comment: Sand and gravel, limestone, natural gas, and peat are produced in Ontario County; sand and gravel, natural gas, and sandstone in Stueben County; and salt in Yates County. These minerals are not produced in the project area, however, the statement fails to recognize its limestone resource. We believe implementation of the project would not have a significant impact on minerals.

Response: Noted.

(12) Comment: No mention is made of the effect of the increased water quality (with-the-project) will have on fish and wildlife resources at Phelps, where Flint Creek empties into Canandaigua Outlet. From Table R, Page II-49, there will be an increase of 130 cfs for the two-year frequency flood, an increase of 250 cfs for the ten-year frequency flood, and an increase of 385 cfs for the 100-year frequency flood (with-the-project). Effects of this increase show up all the way downstream; they are particularly noticeable at Lyons, where the Canandaigua Outlet empties into the Barge Canal. The Montezuma National Wildlife Refuge gets most of its water from the Barge Canal, a few miles downstream from Lyons. Additional water coming into this system could cause detrimental effects to the refuge.

Response: From the nature of the comment, it is assumed that the reviewer is concerned about water quantity and not water quality. With that assumption, our response is as follows: Peak flows downstream from the channel work will be increased as a result of the project. Due to the phenomena of flood plain storage, there is a natural attenuation of flow as the flood crest moves downstream. In other words, impacts of the channel work, in the form of increased peaks, become less as the distance from the channel work is increased. Increased depths of flooding at the Canandaigua Outlet near Phelps was computed to be less than 0.3 foot. Since the construction of the project will not increase the total volume of flow (i.e., only increases peak discharges) there will be no measurable effects on fish and wildlife resources along the Canandaigua Outlet or the Montezuma National Wildlife Refuge.

(13) Comment: We agree in principal with the conclusion that control of the water table in the mucklands is a favorable environmental impact of the project. However, inasmuch as ground water stabilization seems to be a significant part of the project, we believe that the environmental statement should include more information on the areal distribution of water levels, both in the mucklands and in other affected parts of the area.

Response: It would be desirable to have more information on the areal distribution of water levels in the affected areas of the proposed project. However, this data is not available. Crop yield studies indicate a water table of 24 inches to 36 inches is desirable for most truck and field crops on organic soils (Reference No. 37). With installation of the project, owners and operators will have the means to regulate water levels to attain optimum crop yields and also reduce subsidence.

(14) Comment: The statement should indicate whether the planned widening of channels, and consequent increases in cross-sectional areas, will be sufficient to result in a lowering of water table in any considerable portions of the area and should appraise any such effects in relation to the proposed water-table control measures.

Response: Observation of the present channel system indicates a general lowering of the water table where uncontrolled drainage exists on individual fields. Where field outlets are controlled, the water table is maintained at the controlled level. Installation of the structures for water level control will allow each operator a

degree of flexibility in his operation, i.e., high water table will be maintained during nongrowing seasons to limit muck subsidence. The water table will be lowered during the growing season to provide for seed germination, timely cultivation, and proper root development.

(15) Comment: Consideration of outdoor recreation resources were not properly evaluated. Although recreation is not a project purpose, existing and potential recreation resources which may be affected by the proposal should be identified. The statement should also evaluate the impacts of the recommended and alternative actions on existing and potential recreation resources. In addition, the relationship of identified recreation resources and proposed actions should be clearly displayed on a map.

Response: Recreational Resources for New York State's Northwest Recreational Planning and Development Region are discussed on pages II-41 and II-42. None of the identified recreational resources will be affected by installation of the project.

(16) Comment: Spraying of vegetation is not a recommended management practice for pheasants and woodcock. The detrimental effects to wildlife outweigh any benefits.

Response: Changes made in Table P to delete spraying as a recommended management practice.

(17) Comment: No mention is made of an increased flow into Canandaigua Creek and its downstream effect on fish and wildlife habitat.

Response: See response to Comment No. 12.

(18) Comment: Page II-74, Paragraph 2 - The Bureau of Sport Fisheries and Wildlife should be changed to read, U.S. Fish and Wildlife Service."

Response: Change made as suggested.

(19) Comment: The Soil Conservation Service can be commended for its early contact with the State Historic Preservation Officer and manner in which it sought information on archeological resources in the project area. Inclusion of the State Historic Preservation Officer's commentary in this draft environmental statement along with accomplished archeological resource determinations show that satisfactory consideration has been given to cultural resources.

Response: Noted.

(20) Comment: We note on page G-7 (paragraph B) of the Archeological Survey that two "dams" are proposed. Possibly this refers to grade stabilization structures; however, if dams are still to be considered a part of the proposed project, we suggest that the impacts on ground-water resources should be assessed.

Response: The two dams referred to on Page G-7 were considered during the formulation stage of the Flint Creek project as one of the alterntive solutions. These structures were not included in the accepted plan.

(21) Comment: The extent and nature of coordination pertaining to outdoor recreation, with affected public agencies and individuals should be described in this section.

Response: Recreation and Fish and Wildlife efforts have been coordinate with state and federal agencies throughout the evaluation of this project. A recreation site was evaluated above Potter; however, it was agreed that the pool would endanger a deer winter feeding area and would take away from the existing limited stream fisheries. At no time has there been exhibited a need for additional lake recreation in the area nor has there been any support shown from the local sponsors for recreation.

(22) Comment: We hope these comments and suggestions will be of assistance to you.

Response: Noted.

DEPARTMENT OF TRANSPORTATION - UNITED STATES COAST GUARD

(1) Comment: The Department of Transportation has reviewed the material submitted. We have no comments to offer nor do we have any objection to this project.

Response: Noted.

UNITED STATES DEPARTMENT OF AGRICULTURE - OFFICE OF EQUAL OPPORTUNITY
WASHINGTON, D.C. 20250

(1) Comment: We have reviewed the draft environmentl statement to assess the socio-economic effects on minority groups.

We find that the draft lacks any information regarding the socio-economic impacts on minority citizens residing in the target area as required by Soil

Conservation Service guidelines for preparing environmental impact statements (see Federal Register, Vol. 39, No. 107, June 3, 1974).

In the final draft, we recommend that you include a socio-economic assessment of the project on minority groups.

Response: No known minority citizens reside or own land on the Flint Creek flood plain; however, minority citizens could benefit from anticipated increased employment of migrant and nonmigrant workers.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY - REGION II

(1) Comment: The report mentions flooding downstream as a consequence of the proposed project. The area affected would be that between Gorham and Phelps. The flood plain would be increased by 40 feet, raising the number of acres flooded by 62. This tradeoff seems arbitrary in view of the lack of descriptive material about this area. Would downstream flooding lead to further channelization of Flint Creek in a few years?

Response: Changes have been made in Table R and in the narrative to give a more detailed description of the tradeoff involved by installation of the project. Flooding on the muckland is reduced from 2,610 acres to 1,870 acres for the 100-year frequency event. As a result flooding is increased between Gorham to the Canandaigua Outlet from 656 acres to 740 acres. The net difference is a decrease in flooding of 656 acres.

Residents have expressed an interest in channel work from the railroad near Gorham to Tileyard Road. However, studies completed during planning show that the desired benefits would not support the cost of the structural measures. Land use within this area is estimated to be 40 to 50 percent cultivated cropland with the remaining in woods and pasture. There were no houses or buildings identified during project planning that would be flooded as a result of the project and no roads will be overtopped. There is no urban development expected in the defined flood plain since New York State Law prohibits or discourages flood plain development.

Based on present and projected future land use, one would not anticipate any channel enlargement for flood control in the future (project life). Some clearing and snagging for maintenance purpose may be needed.

(2) Comment: Channelization will involve excavation of the streambed and one bank. The east bank in Reach C is wooded. The EIS should specify which bank will be stripped.

Response: Final selection of channel alignment is determined during design stage. Where channel enlargement is necessary, material will be excavated from one side to minimize destruction of wildlife habitat.

(3) Comment: Proposed maintenance includes mowing the grass on the streambanks. This should be discouraged because it would preclude reestablishment of certain vegetation and would be a less effective erosion control mechanism.

Response: Timely and properly carried out mowing helps maintain a dense healthy stand of the desired grasses while inhibiting the invasion of woody vegetation. Woody vegetation tends to create more turbulence and reduce the hydraulic capacity of the channel. Older woody vegetation can create a debris and bank stability problem. A maintenance plan to include mowing, fertilization, and reseeding areas of poor stands is an effective erosion control mechanism.

(4) Comment: Will the drainage of croplands and resulting increased runoff affect any aquifers? Recharge and the water table are reduced by these measures. A lower water table will expose the muck soil to oxygen, causing shrinkage and subsidence of the land. The land would become unfarmable, defeating the purpose of the project.

Response: The purpose of the planned channel work is to carry upland runoff through the muckland, thereby reducing flood damage of high value vegetable crops. Structures for water control will be located on individual farms along the proposed channels. Water level control will be applied for better timing of seasonal cultivation, improve seed germination, and provide protection from subsidence of the muckland. Water level control will be at the discretion of each operator to provide for maximun efficiency of operation and crop growth. The water table will not be lowered as a result of the project.

(5) Comment: Only the upper reaches of the Flint Creek contain fisheries that must be protected. Channelization will remove rocks and riffles necessary for breeding and habitats. Maintenance will remove vegetation. The creek will no longer be habitable by fish.

Response: Location of planned channel work may be found on the project map accompanying planned measures pages I-5 to page I-9. A description and location of this area as per present conditions may be found on pages II-38 and II-39. Limited populations of nongame species have been identified in the main channel designated for construction. No fisheries exist in the drainage laterals.

(6) Comment: Where will the spoils generated by the project be deposited? Provisions must be made to ensure that they will be replanted and will not erode into the stream.

Response: See page II-6. Excavated muck material will generally be spread on the field side of any road, dike, or spoil bank. Roadbanks and spoil areas will be covered with muck soil, where available, to ensure rapid establishment of vegetation to minimize erosion.

(7) Comment: Sedimentation is one of the most serious results of channelization. It is caused by increased water velocities resulting from straightening and smoothing the streambed. Sediment reduces photosynthesis, suffocates aquatic organisms, transports pesticides and nutrients, and decreased hydraulic efficiencies downstream by creating shoals and meanders. Further information can be found in EPA publication 430/9-73-017 on Hydrographic Modifications. The EIS should indicate whether studies have been conducted to project the downstream effects of sedimentation. We believe that such studies could alter the EIS's prediction of a decrease in sediment.

Response: It is concurred that channelization of a natural stream results in increased sedimentation. This is a direct result not only from soil disturbance through the actual excavation of a channel, but also through increased velocities which in turn increase sediment transport capability. Therefore, the broad effects as indicated in EPA publication 430/9-73-017 on Hydrographic Modifications, pages 15-16, and pages 23-25, are generally true. However, application of the specifics pertinent to the Flint Creek project do not necessarily hold to these general effects. As indicated on page II-6 of the EIS, channel work will be carried out following the present alignments of existing manmade ditches. Therefore, there will not be any channel realignment or straightening of a natural stream channel. Increased sedimentation will result

during the construction phase primarily through the disturbance of existing bottom sediments. The adverse effect of this disturbance will basically be one of aesthetics through discoloration of the water from suspended sediment. Sediment control practices, followed during construction, will hold the amount of suspended sediment to a minimum. Any increased velocities through the muck resulting from channelization will be held to a minimum through the installation of grade stabilization structures (page II-7). Allowable nonscour channel velocities were computed utilizing soil samples from the channel and applying the criteria outlined in the Soil Conservation Services Technical Release No. 25, "Planning and Design of Open Channels." Therefore, sediment transport capabilities will not be measurably increased and increased downstream deposition will not occur.

(8) Comment: It has been documented that erosion and sediment deposition is now occurring in Flint Creek. The proposed alternative of channelization is presented to remedy this situation. However, it is known that channelization itself causes sedimentation. An analysis must be conducted to determine (1) how much sediment will be introduced into the stream as a result of channelization and (2) how far downstream the sediment will be transported. This information can then be used to adjust the estimates of sedimentation given in the EIS.

Response: Channelization by itself will not remedy the erosion and sediment deposition now occurring in the resulting Flint Creek Watershed. The principal means of erosion and sediment reduction will be through the installation of vegetative and structural types of land treatment measures (see pages II-5 and II-57). We concur that a temporary increase in sedimentation will result through construction activities. However, post-construction sediment transport will not increase as a result of this project for reasons stated in answer to the preceding comment. Sediment delivered to the mouth of the watershed will decrease (see page II-57).

(9) Comment: The sediment which is now being deposited seems to result from poor land management. The report notes, "Monoculture, vegetable, or corn silage farming... result in water and nutrient losses needed for optimum yields," and" erosion damage is occurring on steep cropland." Much of this could probably be controlled through effective land management. Those items listed

under the heading "Land Treatment Measures" provide a good basis for starting a program. Other measures can be added as results are monitored. The data collected would be used as a gauge of the success of the program. The EIS should also indicate the status of the SCS (and any local) land management program for the area, and how it relates to the proposed project.

Response: The present land treatment program administered by the Ontario, Steuben and Yates County Soil and Water Conservation Districts is discussed in the Soil, Water and Plant Management Status section, pages II-44 and 45. The planned land treatment measures discussed in the plan and EIS (II-5) will also be administered by the respective Soil and Water Conservation Districts with technical assistance provided by the Soil Conservation Service and the Forest Service.

(10) Comment: According to EPA procedures, we have given this EIS a rating of ER-2. This means that we have reservations about the environmental effects of certain aspects of the proposed action, and that additional information should be provided in the final EIS. We appreciate the opportunity to review this project; please send us three copies of the final EIS for review.

Response: Three copies of the final EIS will be furnished to your office as requested.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
OFFICE OF ENVIRONMENTAL ANALYSIS

(1) Comment: We have reviewed the above noted document and believe that, in general, the statement adequately discusses the potential impacts of the proposed project.

Response: Noted.

(2) Comment: However, one area that warrants additional discussion is the long range effect of the project, especially upland land treatment measures, on wildlife. Although the statement recognizes that wildlife habitat will be lost as a result of the project and construction activities will disturb wildlife populations, the long range effect will be additional land clearing and more intensive agriculture. This may adversely affect wildlife in the area, particularly if a significant amount of available habitat is eliminated. Therefore, this consideration should be more fully discussed.

Response: Anticipated future land use, as discussed in the Short Term vs. Long Term Use of Resources, will not be influenced by installation of the structural measures. Upland wildlife habitat management is applicable to all land uses, with the exception of wetland areas. Cropland, pastureland, and forest land will be treated in such a manner as to produce a good secondary crop of wildlife. Wildlife habitat management practices will be interspersed throughout the watershed. These practices will include planting grasses, legumes and shrubs; mowing; maintaining a diversity of habitat; and managing other valuable wildlife food plants. Other practices will include minimum tillage, properly using the residues of grain and seed crops and stubble mulching to leave waste grain and stover on the soil surface for winter food supply and winter cover. Cover crops will be planted annually which will furnish winter wildlife food. Fence line cover will be maintained for pheasant and small grain cover. Paragraph 3 on page II-5 has been rewritten to better reflect effects on wildlife of the land treatment phase of the project.

(3) Comment: Thank you for the opportunity to review this project. We would like to receive three copies of the Final Environmental Impact Statement when it is available.

Response: Three copies of the final EIS will be furnished to your office as requested.

GENESEE/FINGER LAKES REGIONAL PLANNING BOARD
NATURAL RESOURCES COMMITTEE

At its December meeting, the Natural Resources Committee of the Regional Planning Board voiced serious concerns about the Flint Creek project:

(1) Comment: The cost benefit of the project - 1.20:1.00 indirectly and 1.06:1.00 directly - indicates that the benefits accruing from the project are marginal. This plus the relatively few persons to benefit directly indicates that the justification for the project should be re-examined.

Response: The benefit cost ratio has been recomputed using the national (agricultural) income multiplier. Secondary or "Spinoff" benefits will accrue from increased net returns resulting from economic activity stimulated by production, utilization, and disposition of intermediate goods (increased crop production). The B:C ratio excluding secondary benefits is 1.06 to 1.00 however, including secondary benefits the B:C ratio is 1.6 to 1.0. Although your concern for the number of direct beneficiaries is warranted it is significant to note that the impact of the project will be an economic stimulus to the region that will benefit many persons.

(2) Comment: It is our understanding that the district boundaries have not yet been determined. Thus, the annual assessment for maintenance and operation cannot be determined. Without an estimate of these annual costs, the economic feasibility of the project is not known.

While it is recognized that these concerns are raised well beyond the date for submitted comments on the draft EIS, it is hoped that they will be addressed by your office. Further, it is our understanding that these questions have been raised by other agencies.

Response: Operation and maintenance costs represent the value of materials, equipment, services and facilities

needed to operate the project, and make repairs and replacements necessary to maintain structural measures in sound operating condition during the evaluated life of the project. Average annual operation and maintenance costs have been computed at $10,000 and are displayed on Table 4 of the plan. These costs are not dependent upon the watershed district boundary. Therefore, watershed district boundaries do not have to be established prior to determining economic feasibility of the project.

ONTARIO COUNTY ENVIRONMENTAL COORDINATOR'S OFFICE

(1) Comment: The recommendation of the Council is as follows:

Since the land treatment measures have not been brought up to an efficient level, the Environmental Management Council feels that before the large expenditure is made to fund the entire project, an expanded land-treatment program should be put into effect. This may eliminate the need for a project as presently proposed. Should an expanded land-treatment program not be successful in eliminating the majority of damage claims, then the program may be expanded to include structural measures, assuming the B/C ratio still reflects a greater than 1 -to- 1 ratio.

Response: Land treatment measures are the basic element of any watershed project and are considered as the nucleus or initial increment in project formulation. Structural measures are not considered for inclusion in a project until it has been determined that the land treatment measures will not achieve the objectives sought by the sponsors. Land treatment alone was considered as an alternative and a determination was made that it alone will not control flooding of the muckland. Impact of the land treatment alternative are described on (page II-65).

(2) Comment: If the watershed proposal is undertaken, the SCS Land Treatment Plan, which currently carries out erosion prevention and other conservation measures, will be accelerated. The budget for the accelerated Land Treatment Plan is $700,000. We could not determine the budget for the current Land Treatment Plan from the Impact Statement.

Response: The budget for the "current land treatment plan" is not described in the watershed plan or environmental impact statement. The "acres to be treated"

as shown in Table 1 are only those on which adequate treatment is to be achieved during the installation period. The installation cost for the item includes costs for installing all practices throughout the watershed as elements of practice systems which when completed in total would constitute adequate treatment.

(3) Comment: The EIS has no discussion of non-structural measures which might meet the project goals. Since the SCS Guidelines state that these "should be described for every watershed project where minimizing flood loss is a project purpose" (Section D2), a statement is needed explaining why the SCS concluded that non-structural measures would not be useful in this project.

Response: Non-structural measures normally considered for minimizing flood losses include zoining, flood-proofing, flood insurance, land purchase, and warning system. Since none of these measures met the objectives of the Sponsors for flood control on the muck they were not deemed to be a "reasonable alternative" by the Soil Conservation Service and were therefore not included in the plan.

(4) Comment: Specific delineation must be made of the new flood plain. The statement "This is equivalent to an average net increase of flood plain width from Gorham to Phelps of about 40 feet," (page II-59) does not describe the effect at any specific site along the stream. This does not describe the land to be inundated, nor is it clear what an average net increase means in terms of the specific channel geometry and possible effects during flood peaks. Mention must also be made about structures, roads, etc., that could be affected. One apparent oversight noted on a field investigation of the watershed by the Review Team was a sewage treatment plant on the edge of Phelps that was right on the edge of the creek. This may not have even been considered, as the Table R on page II-59 only considers the area to be flooded between Gorham and Phelps, and the sewage treatment plant was

between Phelps and Canandaigua Outlet; no specific mention is ever made in the EIS of this plant.

Response: A flood plain delineation map has been developed for the area in question and is available for study in the Soil Conservation Service office, Syracuse, New York. The only area showing a significant increase in flooding occurs in the reach from Lake to Lake Road and Tileyard Road (Table R). It is impossible to distinguish additional flooding on the map in the remaining reaches since the width of the line to delineate the flooding is greater than the increased width. The reach entitled Griffith Road to Phelps included the flood plain to the Canandaigua Outlet. Table R has been changed to indicate this. There are no identified induced damages to roads, rural residences or buildings, or urban properties. Induced peaks are so slight at the Canandaigua Outlet that there will be no measurable effect on the sewage treatment plant.

TOWN OF SENECA

(1) Comment: In your Environmental Impact Statement on the Flint Creek Watershed Project you state that the downstream peak discharge will be increased by approximately 30 percent (page II-64 No. 4). Since in several areas, in the Town of Seneca, Flint Creek will rise to a depth of 8 feet on frequent occasions, the 30 percent flow increase mentioned above would increase this depth by approximately 2.4 feet, resulting in periodic flooding of a large acreage of good to excellent farmland that is not subject to flooding at this time.

We would like to request, from you, further data on the environmental impact of this project on the downstream areas including detailed maps of the endangered areas within the Town of Seneca.

Should you wish to present this data in an oral report, our regular meetings are held at the Seneca Town Hall in Stanley on every fourth Wednesday of the month at 8 pm. If you are unable to attend these regular meeting we would try to set up a special meeting for this purpose.

Response: According to studies of stream flow hydraulics the depth of flow of the 100-year peak discharge will be increased approximately 0.8 foot through the Town of Seneca. Within the Town of Seneca there will be no increase in the amount of cropland flooded. This information along with a flood plain delineation map was presented at an informational meeting held at Gorham on December 17, 1975, for interested citizens of the Towns of Gorham and Seneca.

TOWN OF GORHAM PLANNING BOARD

(1) Comment: The Town of Gorham Planning Board feels that the Flint Creek Watershed Project is not complete unless every effort is made to minimize flooding and property damage north of the hamlet of Gorham. The Board strongly concurs with the view that it is not equitable to increase the water on this land for the specific benefit of another group.

It is the concern of the Planning Board that every effort should be made to extend the dredging at least from Lake-to-Lake Road to the Tileyard Road.

Response: All structural measures for which P.L. 566 assistance will be made available require economic justification for inclusion in a work plan. Channel work was evaluated from Lake to Lake Road to Tileyard Road during the initial planning stages of the Flint Creek Project. It was determined at this time that the cost of the project would not derive the benefits necessary for justification. This does not preclude the option of individuals or the town to provide normal operation and maintenance to maintain the capacity of the existing channel.

ELIZABETH B. RUGAR, CITIZEN/TAXPAYER

(1) Comment: As a citizen-taxpayer, I am writing to protest the expenditures planned for the Flint Creek Watershed in the Potter-Gorham area.

I find it absolutely unconscionable that taxpayers' dollars, in the amount of $2 million plus, will be spent like this to make it possible for a mere handful of citizens to continue their business on the mucklands.

If they insist on raising crops on swamp bottom, let them take their chances with the natural flow of waters, or do their own improvements and controlling. Let them do their own cooperative dredging and diking against floodwaters.

I understand that the annual benefits are expected to outweigh the annual expenditures by many dollars. But the "benefits" will be reaped by such a very few landowners who are in the business of producing and selling at a profit annual crops of onions, potatoes, carrots, etc. And, of course, their profits will be higher and almost guaranteed if they don't have to suffer the consequences of nature's outbursts.

How can this expenditure be justified? I say it cannot be - no way.

I protest. I protest. I protest.

Response: Noted.

LIST OF APPENDIXES

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Comparison of Benefits and Costs for Structural Measures

APPENDIX B

Project Map

APPENDIX C

Letters of Comment Received on the Draft Environmental Impact Statement

APPENDIX D

Bibliography

APPENDIX E

Definition of Land Treatment Measures
Wetland Definitions
Mammals Non-Game
Reptiles
Amphibians
New York State Birds

APPENDIX F

Water Quality

APPENDIX G

Archeological Survey of the Flint Creek Project

APPROVED BY Robert L. Williams
Name and Title

DATE 6/3/76

APPENDIX A

COMPARISON OF BENEFITS AND COSTS FOR STRUCTURAL MEASURES

Flint Creek Watershed, New York

(Dollars)

Evaluation Unit	Average Annual Benefits 1/			Average Annual Cost 3/	Benefit Cost Ratio
	Damage Reduction 2/	Secondary	Total		
All Structural Measures	147,300	101,900	249,200	123,500	2.0:1.0
Project Administration				15,500	
GRAND TOTAL	147,300	101,900	249,200	139,000	1.8:1.0

1/ Price base current normalized 1976.
2/ In addition, it is estimated that land treatment measures will provide floodwater damage reduction benefits of $4,800 and sediment damage reduction benefits of $3,100 annually.
3/ Price base 1976.

February 1976

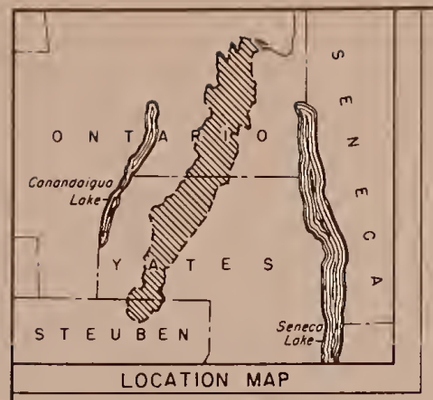
APPENDIX B

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Project Map

FLINT CREEK WATERSHED

ONTARIO, STEUBEN AND YATES COUNTIES, NEW YORK



LOCATION MAP

LEGEND

- Hard surface, medium duty road
- Improved light duty road
- Unimproved dirt road
- Railroad
- Stream
- County line
- Town line
- Watershed project boundary
- Area benefited

PROJECT MEASURES

- Grade Stabilization Structure
- Channel work
- 99+80 Stationing

42°55'
77°06'
565+00
724+40
351+60
100+00
42°35'
77°15'

PHELPS
HOPEWELL
SENECA
GORHAM
MIDDLESEX
JERUSALEM
ITALY
PENN YAN
BENTON
Phelps
Pierson Corners
Seneca Castle
Flint
Stanley
Gorham
Potter
Friend
PRATTSBURG
YATES CO.
STEUBEN CO.
ONTARIO CO.

LATERAL-13
LATERAL-11
LATERAL-10A
LATERAL-10B
LATERAL-9

Griffith Rd.
Newark Res.
Canandaigua Outlet
Outley Pa.
Severance Road
Goose Creek
Flint Creek
Tiley Rd.
Lake To Lake Road
Lehigh Valley Road
Stanley Road
West Swamp Road
Muck
East Swamp Road
Dickerman Road
Potter Creek
Italy Valley Road
Nellie Valley Creek
Segar Gully

Scale 1:31,680
0 1 2 3 Miles

UPPER FIVE MILE CREEK WATERSHED

REVISED JANUARY 1975
USDA-SCS-HYATTSVILLE, MD 1975

APPENDIX C

12-12-75 - copy to H. Stamatel

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
WASHINGTON, D.C. 20310

Honorable Robert W. Long
Assistant Secretary of Agriculture
Washington, D. C. 20250

Dear Mr. Long:

In compliance with provisions of Section 5 of Public Law 566, 83d Congress, the State Conservationist of New York, by letter of 22 September 1975, requested the views of the Chief of Engineers on the work plan and draft environmental statement for the Flint Creek Watershed Project, New York.

We have reviewed the work plan and foresee no conflict with any project or current proposal of this Department. The draft environmental impact statement satisfies the requirements of Public Law 91-190, 91st Congress, insofar as this Department is concerned.

Sincerely,

Charles R. Ford

Charles R. Ford
Deputy Assistant Secretary of the Army
(Civil Works)

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

12/1/75 - copy to H. Stamatel Bivens

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20201

NOV 25 1975

Mr. Robert L. Hilliard
State Conservationist
Soil Conservation Service
Department of Agriculture
Room 400 - Midtown Plaza
700 East Water Street
Syracuse, New York 13210

Dear Mr. Hilliard:

We have reviewed the draft Environmental Impact Statement concerning the Flint Creek Watershed, New York. A copy of our comments is enclosed.

Thank you for the opportunity to review the document.

Sincerely,

Charles Custard

Charles Custard
Director
Office of Environmental Affairs

Enclosure

MEMORANDUM

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
FOOD AND DRUG ADMINISTRATION

TO : Mr. Boris Osheroff
Principal Environmental Officer/H

DATE: October 24, 1975

FROM : Deputy Director
Environmental Impact Staff (HFS-30)

SUBJECT: DEIS:DoA Flint Creek Watershed - Ontario
Steuben, and Yates Counties, New York

In response to your request of October 8, 1975, the subject document has been reviewed, and we offer the following comment for your consideration.

Appendix F, pp. F-1 to F-6. Flint Creek Water Quality Survey. Is the purpose of this study to provide base-line data to document changes in water quality after implementation of the Watershed Project? If so, then it should be noted that the data presented in the survey do not reflect seasonal variations that might occur in water quality due to agricultural activity and climate. The following water quality parameters could show seasonal variation:

(1) Dissolved oxygen concentration, which decreases in warm weather due to the lowered solubility of oxygen in water,

(2) Dissolved and suspended solids might be expected to increase during periods of agricultural activity,

(3) Nutrient levels (N & P) in the water might be expected to increase during spring and summer due to application of fertilizer on nearby farmland,

(4) Pesticide and herbicide concentrations might increase in waterways during the growing season when they are regularly being applied to crops.

Improved base-line data would allow the sponsoring agency to document the effectiveness of the proposed land treatment measures in controlling sediment and pollutant contamination of the waterways after the project is completed. It is suggested that samples for water quality be taken during summer low flow and summer normal flow conditions to better document pre-project water quality.

Buzz L. Hoffmann, Ph.D.

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

PEP ER-75/943

NOV 2 6 1975

Dear Mr. Hilliard:

Thank you for the letter of September 22, 1975, requesting our views and comments on the work plan and draft environmental impact statement for Flint Creek Watershed, Ontario, Steuben, and Yates Counties, New York. The following comments are offered for your consideration.

Work Plan

Environmental impacts related to geologic conditions have been adequately considered in the draft environmental statement and work plan. However, we suggest that the following statements be clarified: (1) "the primary soil and water resource problem is periodic inundation of high value vegetable crops on about 1,695 acres of muckland" (page I-1, paragraph 2); and (2) "the primary soil and water resource problem is about 2,610 acres of muckland, in cluding 1,695 acres of cropland, subject to periodic inundation" (page II-14, paragraph 3). It would be more understandable to state that the primary problem is periodic floodwater damage on 2,610 acres of flood plain underlain by organic muck, of which 1,695 acres are cultivated.

Page I-2, Paragraph 2, Last Sentence. "Indirect flood damages will be derived by reducing interruptions of utilities and commerce." This sentence is difficult to understand, and should be clarified.

Operation and Maintenance Provisions

Page I-16, Structural Measures No. 3, Grass Mowing. The time of mowing can be influential to pheasant and waterfowl-nesting success; early mowing will be detrimental. The plan should specify the time of year for mowing; after June would be preferable.

Abbreviated Environmental Quality Plan

Page I-24, Objectives, Paragraph 2. "Providing fish pond management" is listed as one objective; however, no mention of this is

made in the plan's sections relating to formulation, implementation, or effects. This information should be stated in the work plan and environmental statement.

Another objective listed is "Providing wildlife watering facilities." This objective receives additional mention under "Formulation," but it is not mentioned anywhere else. With the abundance of water in the watershed and the normal precipitation regime, it is doubtful that this is an important objective. Further clarification is desired.

Under Paragraph 3, the objective "Preserving areas of natural scenic beauty, such as wetlands" is listed. It could be argued that wetlands are not scenic. Some areas, such as flooded wood lots containing exposed mud flats and dead or dying trees and stumps, might be considered unsightly and unpleasantly odorous. Preserving wetlands, however, is laudable and deserves mention. Hence, it would seem more logical to list this objective under Paragraph 2, "Enhancing or maintaining quality and quantity of fish and wildlife habitat." Wetlands are used primarily as important fish and wildlife habitats and to provide watershed protection.

Coordination, Page I-25, Paragraph 4. The Bureau of Sport Fisheries and Wildlife should be changed to read, "U.S. Fish and Wildlife Service."

Formulation - Page I-26

With reference to the objectives of the "Environmental Quality Plan" on Page I-24, there is little mention of fish and wildlife related objectives in the "Formulation" section. It is suggested that the second sentence in Paragraph 4 be changed to read, "These practices include, but are not necessarily limited to, planting grasses, legumes, and shrubs; mowing; maintaining a diversity of habitat; and managing valuable wildlife food plants."

Effects and Impacts - Page I-27

This section indicates that implementation of the "Environmental Quality Plan" would cause certain impacts which are listed. Although there are ten objectives listed on Page I-24 under "Fish, Wildlife, Scientific and Scenic" headings, and six objectives for providing watershed protection, only the watershed protection measures are listed as having any impact. If the others have no effect or impact, there is not much point in listing them as objectives.

Display Accounts for the Selected Plan

Page I-33. Under "Measures of Effects" no mention is made of the changes that will occur in the discharge peaks in areas anticipated to be inundated downstream from the construction area, especially between Lake to Lake Road and Tile Yard Road (refer to Tables Q, R, and S in Part II, Pages II-58, 59, and 60). Evidently, it is assumed that no effects will occur; however, since 62 acres will be subject to flooding by the two-year frequency event, it is indicated that there will be fish and wildlife habitat alteration on a fairly regular basis. The effects may be minor, but they should be addressed.

Draft Environmental Statement

Environmental Setting

Sand and gravel, limestone, natural gas, and peat are produced in Ontario County; sand and gravel, natural gas, and sandstone in Steuben County; and salt in Yates County. These minerals are not produced in the project area, however, the statement fails to recognize its limestone resource. We believe implementation of the project would not have a significant impact on minerals.

Environmental Impact

No mention is made of the effect the increased water quality (with-the-project) will have on fish and wildlife resources at Phelps, where Flint Creek empties into Canandaigua Outlet. From Table R, Page II-49, there will be an increase of 130 cfs for the two-year frequency flood, an increase of 250 cfs for the ten-year frequency flood, and an increase of 385 cfs for the 100-year frequency flood (with-the-project). Effects of this increase show up all the way downstream; they are particularly noticeable at Lyons, where the Canandaigua Outlet empties into the Barge Canal. The Montezuma National Wildlife Refuge gets most of its water from the Barge Canal, a few miles downstream from Lyons. Additional water coming into this system could cause detrimental effects to the refuge.

We agree in principal with the conclusion that control of the water table in the mucklands is a favorable environmental impact of the project. However, inasmuch as ground-water stabilization seems to be a significant part of the project,

we believe that the environmental statement should include more information on the areal distribution of water levels, both in the mucklands and in other affected parts of the area.

The statement should indicate whether the planned widening of channels, and consequent increases in cross-sectional areas, will be sufficient to result in a lowering of water table in any considerable portions of the area and should appraise any such effects in relation to the proposed water-table control measures.

Consideration of outdoor recreation resources were not properly evaluated. Although recreation is not a project purpose, existing and potential recreation resources which may be affected by the proposal should be identified. The statement should also evaluate the impacts of the recommended and alternative actions on existing and potential recreation resources. In addition, the relationship of identified recreation resources and proposed actions should be clearly displayed on a map.

Water and Related Land Resource Problems - Table P

Spraying of vegetation is not a recommended management practice for pheasants and woodcock. The detrimental effects to wildlife outweigh any benefits.

Adverse Environmental Effects

No mention is made of an increased flow into Canandaigua Creek and its downstream effect on fish and wildlife habitat.

Consultation and Review with Appropriate Agencies and Others

Page II-74, Paragraph 2 - The Bureau of Sport Fisheries and Wildlife should be changed to read, "U.S. Fish and Wildlife Service."

The Soil Conservation Service can be commended for its early contact with the State Historic Preservation Officer and manner in which it sought information on archeological resources in the project area. Inclusion of the State Historic Preservation Officer's commentary in this draft environmental statement along with accomplished archeological resource determinations shows that satisfactory consideration has been given to cultural resources.

We note on page G-7 (paragraph B) of the Archaeological Survey that two "dams" are proposed. Possibly this refers to grade stabilization structures; however, if dams are still to be considered a part of the proposed project, we suggest that the impacts on ground-water resources should be assessed.

The extent and nature of coordination pertaining to outdoor recreation, with affected public agencies and individuals should be described in this section.

We hope these comments and suggestions will be of assistance to you.

Sincerely yours,

Deputy Assistant Secretary of the Interior

Mr. Robert L. Hilliard
State Conservationist
Soil Conservation Service
Department of Agriculture
Room 400 - Midtown Plaza
700 East Water Street
Syracuse, New York 13210

DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

MAILING ADDRESS:
U.S. COAST GUARD (G-WS/73)
WASHINGTON, D.C. 20590
PHONE (202) 426-2262

1975

Mr. Robert L Hilliard
State Conservationist
Soil Conservation Service
700 East Water Street
Syracuse, New York 13210

Dear Mr. Hilliard:

This is in response to your letter of 22 September 1975 addressed to the Commandant, U. S. Coast Guard concerning a draft environmental impact statement for the Flint Creek Watershed, Ontario, Steuben, and Yates Counties, New York.

The Department of Transportation has reviewed the material submitted. We have no comments to offer nor do we have any objection to this project.

The opportunity to review this draft statement is appreciated.

Sincerely,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
26 FEDERAL PLAZA
NEW YORK, NEW YORK 10007

NOV 26 1975 Class. ER-2

Mr. Robert L. Hilliard
State Conservationist
Soil Conservation Service
700 East Water Street
Syracuse, New York 13210

Dear Mr. Hilliard:

We have reviewed the draft environmental impact statement (EIS) on the Flint Creek Watershed in Ontario, Steuben, and Yates Counties, New York. We have reservations about several aspects of the project, and we request that further information on these aspects be provided in the final EIS.

1. The report mentions flooding downstream as a consequence of the proposed project. The area affected would be that between Gorham and Phelps. The floodplain would be increased by 40 feet, raising the number of acres flooded by 62. This tradeoff seems arbitrary in view of the lack of descriptive material about this area. Would downstream flooding lead to further channelization of Flint Creek in a few years?

2. Channelization will involve excavation of the streambed and one bank. The east bank in Reach C is wooded. The EIS should specify which bank will be stripped.

3. Proposed maintenance includes mowing the grass on the stream-banks. This should be discouraged because it would preclude reestablishment of certain vegetation and would be a less effective erosion control mechanism.

4. Will the drainage of croplands and resulting increased runoff affect any aquifers? Recharge and the water table are reduced by these measures. A lower water table will expose the muck soil to oxygen, causing shrinkage and subsidence of the land. The land would become unfarmable, defeating the purpose of the project.

5. Only the upper reaches of the Flint Creek contain fisheries that must be protected. Channelization will remove rocks and riffles necessary for breeding and habitats. Maintenance will remove vegetation. The creek will no longer be habitable by fish.

6. Where will the spoils generated by the project be deposited? Provisions must be made to ensure that they will be replanted and will not erode into the stream.

7. Sedimentation is one of the most serious results of channelization. It is caused by increased water velocities resulting from straightening and smoothing the streambed. Sediment reduces photosynthesis, suffocates aquatic organisms, transports pesticides and nutrients, and decreases hydraulic efficiencies downstream by creating shoals and meanders. Further information can be found in EPA publication 430/9-73-017 on Hydrographic Modifications. The EIS should indicate whether studies have been conducted to project the downstream effects of sedimentation. We believe that such studies could alter the EIS's prediction of a decrease in sediment.

8. It has been documented that erosion and sediment deposition is now occurring in Flint Creek. The proposed alternative of channelization is presented to remedy this situation. However, it is known that channelization itself causes sedimentation. An analysis must be conducted to determine (1) how much sediment will be introduced into the stream as a result of channelization and (2) how far downstream the sediment will be transported. This information can then be used to adjust the estimates of sedimentation given in the EIS.

9. The sediment which is now being deposited seems to result from poor land management. The report notes, "Monoculture, vegetable, or corn silage farming... result in water and nutrient losses needed for optimum yields," and "erosion damage is occurring on steep cropland." Much of this could probably be controlled through effective land management. Those items listed under the heading "Land Treatment Measures" provide a good basis for starting a program. Other measures can be added as results are monitored. The data collected would be used as a gauge of the success of the program. The EIS should also indicate the status of the SCS (and any local) land management program for the area, and how it relates to the proposed project.

According to EPA procedures, we have given this EIS a rating of ER-2. This means that we have reservations about the environmental effects of certain aspects of the proposed action, and that additional information should be provided in the final EIS. We appreciate the opportunity to review this project; please send us three copies of the final EIS for review.

Sincerely yours,

Roland B. Hemmett

Roland B. Hemmett
Acting Chief
Environmental Impacts Branch

12-15-75 - copy to Henry Stamatel

E. Bivens

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233

Ogden Reid,
Commissioner

December 11, 1975

Mr. Robert L. Hilliard
State Conservationist
USDA Soil Conservation Service
Room 400 - Midtown Plaza
700 East Water Street
Syracuse, New York 13210

Dear Mr. Hilliard:

Draft Environmental Impact Statement
Flint Creek Watershed
Ontario, Steuben, and Yates Counties
DEC Project No. 800-99-0047

We have reviewed the above noted document and believe that, in general, the statement adequately discusses the potential impacts of the proposed project.

However, one area that warrants additional discussion is the long range effect of the project, especially upland land treatment measures, on wildlife. Although the statement recognizes that wildlife habitat will be lost as a result of the project and construction activities will disturb wildlife populations, the long range effect will be additional land clearing and more intensive agriculture. This may adversely affect wildlife in the area, particularly if a significant amount of available habitat is eliminated. Therefore, this consideration should be more fully discussed.

Thank you for the opportunity to review this project. We would like to receive three copies of the Final Environmental Impact Statement when it is available.

Very truly yours,

Terence P. Curran
Director of Environmental Analysis

ONTARIO COUNTY
ENVIRONMENTAL COORDINATOR'S OFFICE

120 NORTH MAIN STREET
CANANDAIGUA, NEW YORK 14424
* * * * * * * * * *
Telephone: (315) 394-7070 (Ext. 227)

December 8, 1975

JOSEPH H. CARVER
Environmental Coordinator

CHARLES D. JOHNCOX
Environmental Aide

Mr. Henry Stamatel
S. C. S.
Room 400 - Mid Town Plaza
200 East Water Street
Syracuse, New York 13210

Dear Mr. Stamatel:

After reviewing your comments on Cornell University's Center for Environmental Quality Management Rewiew of the Flint Creek Watershed Environmental Impact Statement, I am very satisfied on the majority of points raised.

In the interest of time, I have xeroxed the pages from the Cornell Study, which contain the points I would like you to address. As you will note, there are only three points we would like expanded upon. It is not the Council's intent to delay the project unduly if the project has sound merit.

The recommendation of the Council is as follows:

> Since the land treatment measures have not been brought up to an efficient level, the Environmental Management Council feels that before the large expenditure is made to fund the entire project, an expanded land-treatment program should be put into effect. This may eliminate the need for a project as presently proposed. Should an expanded land-treatment program not be successful in eliminating the majority of damage claims, then the program may be expanded to include structural measures, assuming the B/C ratio still reflects a greater than 1 -to- 1 ratio.

I hope these questions and recommendation will prove helpful to you. The Council wishes to express its appreciation to you for your attendance at our December 4, 1975 meeting. Minutes of same will be forwarded so that you may make use of the issues raised in the course of discussion.

Very truly yours,

ENVIRONMENTAL MANAGEMENT COUNCIL

Charles Johncox

CDJ:hr

Charles D. Johncox

DESCRIPTION OF THE FLINT CREEK WATERSHED ENVIRONMENTAL IMPACT STATEMENT

The Flint Creek Watershed Environmental Impact Statement was prepared by the Soil Conservation Service (SCS) and consists of flood prevention measures and expansion of the current Land Treatment Plan.

The flood control measures would expend 1.6 million dollars to reduce flood damages on 1,695 acres of cropland by 73%. The main benefit would be a several thousand dollar increase in annual income to each of ten farms. The Federal government would pay for 92% of the project cost. The rest of the cost would be paid for by area residents. No indication is given of how the 8% to be paid by local sources will be obtained.

Twenty-eight acres of cropland would be withdrawn from production. Downstream from the project, flooding would be increased on approximately 84 acres, most of which is not under agricultural production. According to the SCS, revised predictions of downstream flooding will be included in the final impact statement.

If the watershed proposal is undertaken, the SCS Land Treatment Plan, which currently carries out erosion prevention and other conservation measures, will be accelerated. The budget for the accelerated Land Treatment Plan is $700,000. We could not determine the budget for the current Land Treatment Plan from the Impact Statement.

EVALUATION OF THE ENVIRONMENTAL SETTING

Topics Considered in the EIS

Nearly all of the topics listed in the SCS Guidelines are covered in the EIS. (See Appendix 4 for our detailed findings.)

We have two suggestions for improving the impact statement. First, greater attention should be given (page 41) to recreation resources in the Flint Creek Watershed. Second, the EIS has no discussion of non-structural measures which might meet the project goals. Since the SCS Guidelines state that these "should be described for every watershed project where minimizing flood loss is a project purpose" (Section D2), a statement is needed explaining why the SCS concluded that non-structural measures would not be useful in this project.

Documentation of Data

The Guidelines state that "the EIS is to summarize and document data sources." In about one-third of the cases we examined, data sources were not identified (see Appendix 4). Examples of undocumented data include the percentage cover of vegetation types, crop yields, land values, and stream quality.

Structures and Channels

Description

Flood damage reduction on the mucklands will be accomplished by channel modifications and water control and grade stabilization structures. The channel work will enable water to move off the muckland at a faster rate by enlarging existing channels. Water control structures in conjunction with lateral drainageways will route runoff from intermittant tributaries to the main channel and bypass the muckland. This is one of the primary purposes of the project, to reduce the yearly bankful discharges that result in flooding and damage to crops, equipment, etc.

The effect of the flood control structures on the hydrology of Flint Creek was partially discussed. The effect of flooding downstream from the structures has been questioned in a number of letters, according to Mr. Eudell Bivens, Chief of Watershed Planning in the State office of SCS, at a meeting in Syracuse on October 28. This section is in the process of being redone, using more sophisticated techniques. The report will be out in approximately a month. Mr. Bivins stated that public meetings may be held when the report is ready.

Comment

A number of items should be addressed in the report. First, specific delineation must be made of the new floodplain. The statement "This is equivalent to an average net increase of floodplain width from Gorham to Phelps of about 40 feet," (Page II-59) does not describe the effect at any specific site along the stream. This does not describe the land to be inundated, nor is it clear what an average net increase means in terms of the specific channel geometry and possible effects during flood peaks. Mention must also be made about structures, roads, etc., that could be affected. One apparent oversight noted on a field investigation of the watershed by the Review Team was a sewage treatment plant on the edge of Phelps that was right on the edge of the creek. This may not have even been considered, as the Table R on page II-59 only considers the area to be flooded between Gorham and Phelps, and the sewage treatment plant was between Phelps and Canandaigua Outlet; no specific mention is ever made in the EIS of this plant.

E. BIVENS

9-18-75 - copy to Henry Stamatel

South Street
Gorham, New York 14461
September 17, 1975

U.S. Department of Agriculture
Soil Conservation Service
Room 400 - Midtown Plaza
700 East Water Street
Syracuse, New York 13210

Gentlemen:

The Town of Gorham Planning Board feels that the Flint Creek Watershed Project is not complete unless every effort is made to minimize flooding and property damage north of the hamlet of Gorham. The Board strongly concurs with the view that it is not equitable to increase the water on this land for the specific benefit of another group.

It is the concern of the Planning Board that every effort should be made to extend the dredging at least from Lake-to-Lake Road to the Fileyard Road.

Very truly yours,

Robert L. Gage

Robert L. Gage, Chairman

37 Hollister Street
Dundee, N.Y. 14837
October 17, 1975

Robert L. Hilliard, Soil Conservation Service
Room 400, Midtown Plaza
700 East Water Street
Syracuse, N.Y. 13210

Dear Mr. Hilliard:

As a citizen-taxpayer, I am writing to protest the expenditures planned for the Flint Creek Watershed in the Potter-Gorham area.

I find it absolutely unconscionable that taxpayers' dollars, in the amount of $2 million plus, will be spent like this to make it possible for a mere handful of citizens to continue their business on the mucklands.

If they insist on raising crops on swamp bottom, let them take their chances with the natural flow of waters, or do their own improvements and controlling. Let them do their own cooperative dredging and diking against floodwaters.

I understand that the annual benefits are expected to outweigh the annual expenditures by many dollars. But the "benefits" will be reaped by such a very few landowners who are in the business of producing and selling at a profit annual crops of onions, potatoes, carrots, etc. And, of course, their profits will be higher and almost guaranteed if they don't have to suffer the consequences of nature's outbursts.

How can this expenditure be justified? I say it cannot be - no way.

I protest. I protest. I protest.

Elizabeth B. Rugar

Elizabeth B. Rugar

10/8/75-Copy to Henry S. Stamatel BIVENS

UNITED STATES DEPARTMENT OF AGRICULTURE
OFFICE OF EQUAL OPPORTUNITY
WASHINGTON, D.C. 20250

OCT 06 1975

IN REPLY
REFER TO: 8140 Supplement 7

SUBJECT: Draft Plan and Draft Environmental Impact Statement, Flint Creek Watershed, Ontario, Steuben and Yates Counties New York

TO: Robert L. Hilliard, State Conservationist

THROUGH: Verne M. Bathurst, Deputy Administrator for Management, SCS

We have reviewed the draft environmental statement to assess the socio-economic effects on minority groups.

We find that the draft lacks any information regarding the socio-economic impact on minority citizens residing in the target area as required by Soil Conservation Service guidelines for preparing environmental impact statements (see Federal Register, Vol. 39, No. 107, June 3, 1974).

In the final draft, we recommend that you include a socio-economic assessment of the project on minority groups.

Miles S. Washington Jr.

MILES S. WASHINGTON, JR.
Acting Director

~~AES~~
LFB

TOWN OF SENECA

BOX 453 STANLEY, NEW YORK 14561

315-596-5251

Town of Seneca
Planning Board

October 6, 1975

U.S. Dept. of Agriculture
Soil Conservation Serv.
480 Main St.
Canandaigua, N.Y. 14424

Re: Flint Creek Watershed Project

Gentlemen:

In your Environmental Impact Statement on the Flint Creek Watershed Projectyou state that the downstream peak discharge will be increased by approx. 30% (Page II-64 #4). Since in several areas, in the Town of Seneca, Flint Creek will rise to a depth of 8 feet on frequent occasions, the 30% flow increase mentioned above would increase this depth by approximately 2.4 feet, resulting in periodic flooding of a large acreage of good to excellent farm land that is not subject to flooding at this time.

We would like to request, from you, further data on the environmental impact of this project on the downstream areas including detailed maps of the endangered areas within the Town of Seneca.

Should you wish to present this data in an oral report, our regular meetings are held at the Seneca Town Hall in Stanley on every fourth Wednesday of the month at 8 PM. If you are unable to attend these regular meeting we would try to set up a special meeting for this purpose.

Respectfully yours,
Town of Seneca Planning Board

by: Friedrich W. Amberg
(Chairman)

cc: Seneca Town Board

1-5-76 - copy to Henry Stamatel BIVENS

1-6-76 - copy to: Herbert Lyford
John J. Rappa
Douglas J. Burdick

GENESEE / FINGER LAKES REGIONAL PLANNING BOARD
Suite 500, Ebenezer Watts Building, 47 South Fitzhugh Street, Rochester, New York 14614
716-428-5640

ANNE E. AVERY, Chairman
PHILIP ROWLEY, First Vice Chairman
ARTHUR B. EDDY, Second Vice Chairman
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VIRGINIA T. DIEBOLT, Secretary

STUART O. DENSLOW, Executive Director

January 2, 1976

Mr. Robert L. Hilliard, State Conservationist
USDA Soil Conservation Service
Room 400, Midtown Plaza
700 East Water Street
Syracuse, New York 13210

Re: Flint Creek Watershed
Draft EIS

Dear Mr. Hilliard:

At its December meeting, the Natural Resources Committee of the Regional Planning Board voiced serious concerns about the Flint Creek project:

1) The cost benefit of the project - 1.20:1.00 indirectly and 1.06:1.00 directly - indicates that the benefits accruing from the project are marginal. This plus the relatively few persons to benefit directly indicates that the justification for the project should be re-examined.

2) It is our understanding that the district boundaries have not yet been determined. Thus, the annual assessment for maintenance and operation cannot be determined. Without an estimate of these annual costs, the economic feasibility of the project is not known.

While it is recognized that these concerns are raised well beyond the date for submitted comments on the draft EIS, it is hoped that they will be addressed by your office. Further, it is our understanding that these questions have been raised by other agencies.

Sincerely,

Margaret Ely

Margaret Ely
Assistant Planner
Planning Assistance

ME:jm

1-6-76 - copy to: Herbert J. Lyford, AC, SCS, Batavia
John J. Rappa, DC, SCS, Canandaigua
Douglas J. Burdick, DC, SCS, Penn Yan

APPENDIX D

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APPENDIX E

DEFINITION OF LAND TREATMENT MEASURES

Conservation Cropping System (acres): Growing crops in combination with needed cultural and management measures. Cropping systems include rotations that contain grasses and legumes as well as rotations in which the desired benefits are achieved without the use of such crops.

Crop Residue Use (acres): Using plant residues to protect cultivated fields during critical erosion periods.

Field Windbreak (feet): A strip or belt of trees or shrubs established within or adjacent to a field.

Irrigation System, Sprinkler (number): A planned irrigation system where all necessary facilities have been installed for the efficient application of water for irrigation by means of perforated pipes or nozzles operated under pressure.

Irrigation System-Subsurface: A planned irrigation system where all necessary water control structures have been installed for the efficient distribution of irrigation water by surface means such as furrows, borders, contour levees or contour ditches, or by subsurface means.

Pumping Plant For Water Control (number): A pumping facility installed to transfer water for a conservation need, including removing excess surface or ground water; filling ponds, ditches, or wetlands; or for pumping from wells, ponds, streams, and other sources.

Subsurface Drain (feet): A conduit, such as tile, pipe, or tubing, installed beneath the ground surface and which collects and/or conveys drainage water.

Contour Farming: Farming sloping cultivated land in such a way that plowing, preparing land, planting, and cultivating are done on the contour. (This includes following established grades of terraces, diversions, or contour strips.)

Drainage Main or Lateral (feet): An open drainage ditch constructed to a designed size and grade. Does not include Drainage Field Ditch.

Agricultural Waste Management System (number): A planned agricultural waste management system to contain and manage liquid and solid wastes including runoff from concentrated waste areas with ultimate disposal in a manner which does not degrade air, soil or water resources. This practice includes systems for safe disposal of livestock wastes, municipal waste treatment plant effluents and sludges, and agricultural processing wastes through use of soil and plants.

Disposal Lagoon (number): An impoundment made by constructing an excavated pit, dam, embankment, dike, levee, or combination of these, for biological treatment of organic wastes. (Does not include holding ponds and tanks.)

Minimum Tillage (acres): Limiting the number of cultural operations to those that are properly timed and essential to produce a crop and prevent soil damage.

Diversion (feet): A channel with a supporting ridge on the lower side constructed across the slope.

Mulching (acres): Applying plant residues or other suitable materials not produced on the site to the soil surface.

Grassed Waterway or Outlet (acres): A natural or constructed waterway or outlet shaped or graded and established in vegetation suitable to safely dispose of runoff from a field, diversion, terrace, or other structure.

Stripcropping, Field: Growing crops in a systematic arrangement of strips or bands across the general slope (not on the contour) to reduce water erosion. The crops are arranged so that a strip of grass or close-growing crop is alternated with a clean-tilled crop or fallow.

Pasture and Hayland Management (acres): Proper treatment and use of pastureland or hayland.

Pasture and Hayland Planting (acres): Establishing and reestablishing long-term stands of adapted species of perennial, biennial, or reseeding forage plants. (Includes Pasture and Hayland Renovation. Does not include Grassed Waterway or Outlet on cropland.)

Pond (number): A water impoundment made by constructing a dam or embankment, or by excavating a pit or "dugout".

Fishpond Management (number): Developing or improving impounded water to produce fish for domestic use or recreation.

Deferred Grazing (acres): Postponing grazing or resting grazing land for a prescribed period.

Livestock Exclusion (acres): Excluding livestock from an area where grazing is not wanted.

Proper Grazing Use (acres): Grazing at an intensity which will maintain enough cover to protect the soil and maintain or improve the quantity and quality of desirable vegetation.

Field Border (feet): A border or strip of perennial vegetation established at the edge of a field by planting or by converting it from trees to herbaceous vegetation or shrubs.

Tree Planting (acres): The establishment of forest cover necessary to adjust and improve land use, to upgrade its productive capability and reduce runoff and erosion.

Recreation Area Improvement (acres): Establishing grasses, legumes, vines, shrubs, trees, or other plants or selectively reducing stand density and trimming woody plants to improve an area for recreation.

Recreation Land Grading and Shaping (acres): Altering the surface of land to meet the requirement of recreation facilities.

Recreation Trail and Walkway (feet): A pathway prepared especially for pedestrian, equestrian, and cycle travel.

Access Road (feet): A road constructed as a part of a conservation plan to provide needed access.

Wildlife Watering Facility (number): Constructing, improving, or modifying watering facilities for wildlife.

Wildlife Upland Habitat Management (acres): Retaining, creating or managing wildlife habitat other than wetland.

Wildlife Wetland Habitat Management (acres): Retaining, creating, or managing wetland habitat for wildlife.

Critical Area Planting (acres): Planting vegetation such as trees, shrubs, vines, grasses, or legumes on critical areas. (Does not include tree planting mainly for wood products.)

Mulching (acres): Applying plant residues or other suitable materials not produced on the site to the soil surface.

Harvest Cutting and Hydrologic Stand Improvement (acres): The harvest,thin, weed. or release of forest stands to increase timber value and growth and enhance wildlife habitat and recreation opportunities while protecting and improving hydrologic conditons and aesthetic quality.

Woodland Grazing Control (Fencing) (miles and acres): The fencing out of domestic livestock to prevent the impairment of tree growth and development and hydrologic conditions in woodland.

Log Road and Skid Trail Erosion Control (miles and acres): Revegetation of eroding areas on old logging roads and skid trails and installation of water bars and other small water diverting structures to channel runoff from the road surface to undisturbed forest land.

WETLAND DEFINITIONS

The following is a definition of wetland types as per "Wetlands of the United States," Circular 39, USDI, Fish and Wildlife Service, Washington, D. C., 1971.

Type 3, "Inland Shallow Fresh Marshes" - The soil is usually waterlogged during the growing season. Often it is covered with up to 6 inches or more of water. The vegetation contains such species as cattails, bulrushes, and arrowheads. Waterfowl and marsh birds use the area for feeding and nesting.

Type 4, "Inland Deep Fresh Marshes" - Water is usually less than 10 feet deep. Vegetation is pondweeds, water lilies, coontail, and other submerged aquatics, highly used by waterfowl.

Type 5, "Inland Open Fresh Water" - Water is usually less than 10 feet deep and is fringed by a border of emergent vegetation. Vegetation includes pondweeds, naiads, wild celery, coontail,water milfoils, musk grasses, water lilies, and spatterdocks. Where vegetation is plentiful, they are used as nesting and feeding areas by ducks, geese and coots, especially during migration.

Type 6, "Shrub Swamps" - The sod is usually waterlogged during the growing season and is often covered with as much as 6 inches of water. They contain vegetation such as alders, buttonbrush, dogwoods, etc. They provide some food value for wood duck, wood cock, black duck, deer and rabbit. Songbirds also use the area for nesting.

Type 7, "Wooded Swamps" - The soil is waterlogged at least to within a few inches of its surface during the growing season and is often covered with as much as one foot of water. They contain tree species of willow, red maple, elm (large portion dead due to dutch elm disease) and some white cedar and when bordering water, nesting is provided for wood and black ducks. Habitat is also provided for deer and songbirds with an occasional grouse.

WATERSHED MAMMALS NON-GAME[1/]

Opossum
Masked Shrew
Smoky Shrew
Pygmy Shrew
Shorttail Shrew
Least Shrew
Hairytail Mole
Starnose Mole
Little Brown Myotis
Keen Myotis
Indiana Myotis
Small-footed Myotis
Silver-haired Bat
Eastern Pipistrel
Big Brown Bat
Red Bat
Hoary Bat
Woodchuck
Eastern Chipmunk
Red Squirrel
Southern Flying Squirrel
Deer Mouse
White-footed Mouse
Southern Bog Lemming
Boreal Redback Vole
Meadow Vole
Pine Vole
Muskrat
Norway Rat
House Mouse
Meadow Jumping Mouse
Woodland Jumping Mouse
Porcupine
Coyote
Red Fox
Gray Fox
Raccoon
Shorttail Weasel
Least Weasel
Longtail Weasel
Mink
Striped Skunk
Bobcat

WATERSHED REPTILES[2/]

Spotted Turtle
Snapping Turtle
Painted Turtle
Water Snake
Brown Snake
Garter Snake
Milk Snake

WATERSHED AMPHIBIANS[3/]

Spotted Salamander
Blue Spotted Salamander
Red Backed Salamander
Red Spotted Newt
American Toad
Spring Peeper
Bullfrog
Green Frog
Lepord Frog
Wood Frog
Grey Toe Frog

1/ Adapted from a listing prepared for Montezuma National Wildlife Refuge, USDI Bureau of Sport Fisheries & Wildlife, July 1972.

2/ Reilly, E. M., Snakes of New York, NYS Conservation Department, Division of Conservation Education Information Leaflet H-1 JJ 55.
Reilly, E. M., Turtles of New York, NYS Conservation Department, Division of Conservation Education Information Leaflet H3 JJ 58.

3/ Wright, A. H., Frogs and Toads of New York, NYS Conservation Department, Division of Conservation Education Information Leaflet H-6 AS 55.
Reilly, E. M., Salamanders and Lizards of New York, NYS Conservation Department, Division of Conservation Education Information Leaflet H-2 JJ 57.

BIRDS OF THE WATERSHED [1/]

Breeds Locally

Pied-Billed Grebe
Great Blue Heron
Green Heron
Least Bittern
American Bittern
Canada Goose
Mallard
Black Duck
Gadwall
Pintail
Green-Winged Teal
Blue-Winged Teal
Shoveler
Wood Duck
Hooded Merganser
Cooper's Hawk
Red-Tailed Hawk
Red-Shouldered Hawk
Marsh Hawk
Sparrow Hawk
Ruffed Grouse
Ring-Necked Pheasant
Turkey
Virginia Rail
Common Gallinule
American Coot
Killdeer
American Woodcock
Common Snipe
Spotted Sandpiper
Black Tern
Rock Dove
Mourning Dove
Yellow-Billed Cuckoo
Black-Billed Cuckoo
Screech Owl
Great Horned Owl
Barred Owl
Saw-Whet Owl
Common Nighthawk
Chimney Swift
Ruby-Throated Hummingbird
Belted Kingfisher
Yellow-Shafted Flicker
Pileated Woodpecker
Red-Bellied Woodpecker
Red-Headed Woodpecker
Hairy Woodpecker
Downy Woodpecker
Eastern Kingbird
Great Crested Flycatcher
Eastern Phoebe
Acadian Flycatcher
Traill's Flycatcher
Least Flycatcher
Eastern Wood Pewee
Horned Lark
Tree Swallow
Bank Swallow
Barn Swallow
Cliff Swallow
Blue Jay
Common Crow
Black-Capped Chickadee
Tufted Titmouse
White-Breasted Nuthatch
Brown Creeper
House Wren
Long-Billed Marsh Wren
Short-Billed Marsh Wren
Catbird
Brown Thrasher
Robin
Wood Thrush
Veery
Eastern Bluebird
Cedar Waxwing
Starling
Yellow-Throated Vireo
Red-Eyed Vireo
Warbling Vireo
Black-and-White Warbler
Prothonotary Warbler
Golden-Winged Warbler
Yellow Warbler
Cerulean Warbler
Chestnut-Sided Warbler
Ovenbird
Northern Waterthrush
Mourning Warbler
Yellowthroat
Yellow-Breasted Chat
Hooded Warbler
American Redstart
House Sparrow
Bobolink
Eastern Meadowlark
Red-Winged Blackbird
Baltimore Oriole
Common Grackle
Brown-Headed Cowbird
Scarlet Tanager
Cardinal
Rose-Breasted Grosbeak
Indigo Bunting
American Goldfinch
Rufous-Sided Towhee
Savannah Sparrow
Grasshopper Sparrow
Henslow's Sparrow
Vesper Sparrow
Chipping Sparrow
Field Sparrow
Swamp Sparrow
Song Sparrow

1/ Reilly, E. M., Parkes, K. C., New York State Birds, New York State Museum and Science Service State Education Department, Albany, New York.

BIRDS OF THE WATERSHED[1/]

Common Transients

Horned Grebe
American Widgeon
Canvasback
Greater Scaup
Lesser Scaup
Common Goldeneye
Bufflehead
Oldsquaw
White-Winged Scoter
Ruddy Duck
Common Merganser
Red-Breasted Merganser
Broad-Winged Hawk
Osprey
King Rail
Semipalmated Plover
Black-Bellied Plover
Ruddy Turnstone
Solitary Sandpiper
Greater Yellowlegs
Lesser Yellowlegs
Pectoral Sandpiper
Least Sandpiper
Dunlin
Short-Billed Dowitcher
Semipalmated Sandpiper
Herring Gull
Ring-Billed Gull
Common Tern
Barn Owl
Short-Eared Owl
Yellow-Bellied Sapsucker
Rough-Winged Swallow
Hermit Thrush
Swainson's Thrush
Golden-Crowned Kinglet
Ruby-Crowned Kinglet
Water Pipit
Loggerhead Shrike
Tennessee Warbler
Nashville Warbler
Magnolia Warbler
Black-Throated Blue Warbler
Myrtle Warbler
Black-Throated Gray Warbler
Black-Throated Green Warbler
Blackburnian Warbler
Bay-Breasted Warbler
Blackpoll Warbler
Louisiana Waterthrush
Rusty Blackbird
Evening Grosbeak
Slate-Colored Junco
Tree Sparrow
White-Crowned Sparrow
White-Throated Sparrow

Uncommon to Rare Transients

Common Loon
South Trinidad Petrel
White Pelican
Double-Crested Cormorant
Cattle Egret
Common Egret
Black-Crowned Night Heron
Wood Ibis
Glossy Ibis
Whistling Swan
Brant
Snow Goose
Blue Goose
European Widgeon
Redhead
Ring-Necked Duck
Barrow's Goldeneye
Harlequin Duck
Rough-Legged Hawk
Bald Eagle
Pigeon Hawk
Clapper Rail
Yellow Rail
Black Rail
American Golden Plover
Knot
Purple Sandpiper
White Rumped Sandpiper
Long-Billed Dowitcher
Stilt Sandpiper
Western Sandpiper
Buff-Breasted Sandpiper
Marbled Godwit
Hudsonian Godwit
Sanderling
Red Phalarope
Wilson's Phalarope
Northern Phalarope
Long-Tailed Jaeger
Great Black-Backed Gull
Laughing Gull
Black-Legged Kittiwake
Caspian Tern
Thick-Billed Murre
Olive-Sided Flycatcher
Bonaparte's Gull
Red-Breasted Nuthatch
Winter Wren
Carolina Wren
Gray-Cheeked Thrush
Blue-Gray Gnatcatcher
Northern Shrike
Solitary Vireo
Philadelphia Vireo
Blue-Winged Warbler
Orange-Crowned Warbler
Parula Warbler
Cape May Warbler
Palm Warbler
Wilson's Warbler
Canada Warbler
Pine Grosbeak
Common Redpoll
Pine Siskin
Red Crossbill
White-Winged Crossbill
Fox Sparrow
Lincoln's Sparrow
Snow Bunting

1/ Reilly, E. M., Parkes, K. C., New York State Birds, New York State Museum and Science Service State Education Department, Albany, New York.

APPENDIX F

Flint Creek Water Quality Survey

Sampling Station Descriptions

FC-1 Flint Creek at New York Rt. 364 in the Town of Potter, Yates County and approximately one mile downstream of the proposed floodwater retarding structure.

FC-2 Nettle Valley Creek at New York Rt. 364 in the Town of Potter, Yates County and just downstream of the proposed multi-purpose structure.

FC-3 Flint Creek at Goodrich Road in the Town of Potter, Yates County and within the area known as the Potter Muck or Potter Swamp.

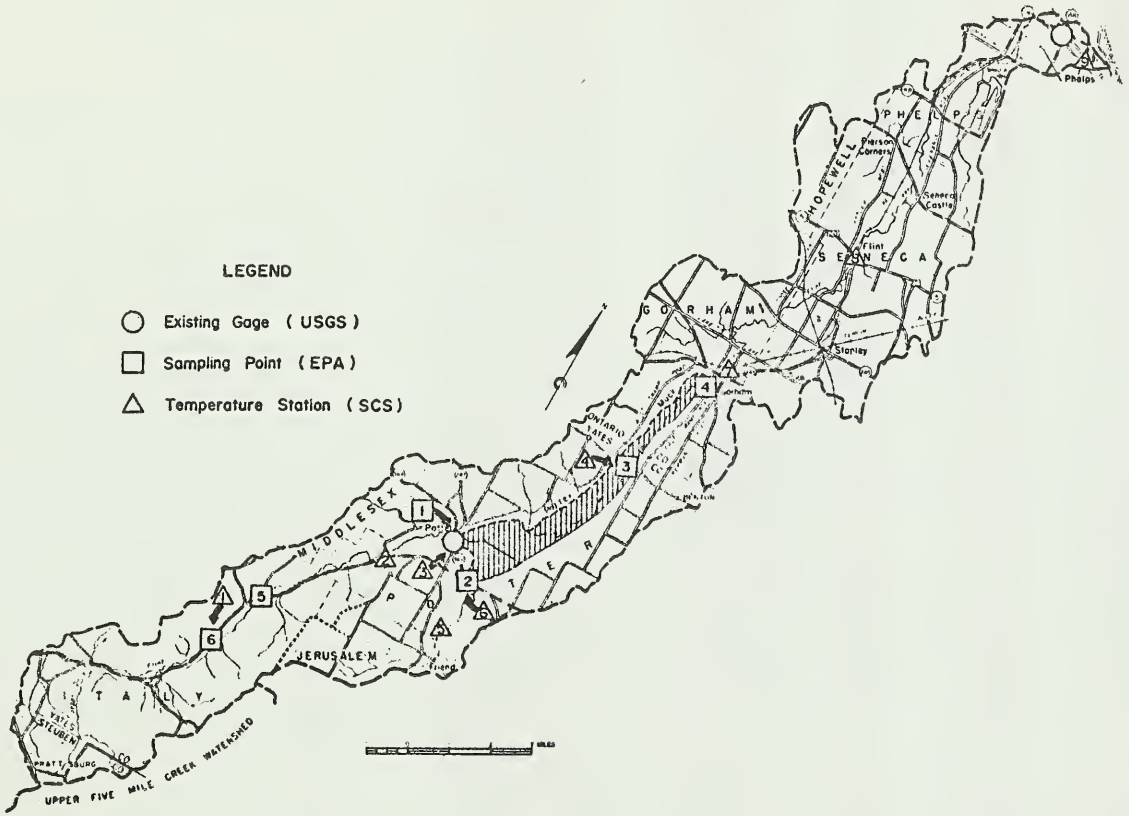
FC-4 Flint Creek at East Swamp Road in the Town of Gorham, Ontario County and at the downstream end of the Potter Muck.

FC-5 Flint Creek at Italy Valley Road in the Town of Italy, Yates County between Shay Hill Road and Camp Koinonia and approximately .7 miles upstream of the upper end of the proposed floodwater retarding structure's pool.

FC-6 Flint Creek at Italy Valley Road in the Town of Italy, Yates County a short distance south of the Italy Valley Cemetery, immediately upstream of the channelized stream reach, and approximately three miles upstream of the upper end of the proposed floodwater retarding structure's pool.

Note: All sites are bridge stations.

FLINT CREEK WATERSHED
WATER SAMPLING STATIONS



FLINT CREEK WATERSHED

Ontario, Yates, and Steuben Counties, N.Y.

Water Quality Analyses[1/]

Station No.	FC-1	FC-2	FC-3	FC-4	FC-5	FC-6
Date	11/5/74	11/5/74	11/5/74	11/5/74	11/5/74	11/5/74
RFO Lab No.	0980	0981	0979	0978	0982	0983
Sampling Method	Grab	Grab	Grab	Grab	Grab	Grab
Time	1125	1150	1050	1025	1216	1230
Weather	Overcast	Overcast	Overcast	Overcast	Overcast	Overcast
Surface	Clean	Clean	Clean	Clean	--	Clean
Color	--	Clear	Brown*	Green**	Clear	Clear
Sample Depth (ft.)	1.0	1.0	1.0	1.0	2.0	1.0
Station Depth (ft.)	--	2.0	2.0	2.0	4.0	2.0
Air Temperature (°C)	--	7	6	6	7	7
Sample Temperature (°C)	9	8	8	8	8	8
Dissolved Oxygen (mg/l)	6.9	8.7	8.3	8.9	9.9	10.7
pH	7.1	7.3	7.7	8.1	7.6	7.8
Alkalinity (mg/l)	120	140	146	172	94	94
Turbidity (J.T.U.)	25	17	68	33	30	22
Total Solids (mg/l)	194	322	234	291	164	171
Dissolved Solids (mg/l)	173	212	226	273	145	128
Total Sus. Solids (mg/l)	21	110	8	18	19	43
Conductivity (u mhos/cm)	250	300	320	400	225	235
Organic Nitrogen (mg/l)	.051	.003	.135	.109	.031	.044
Ammonia Nitrogen (mg/l)	.023	.071	.087	.039	.019	.006
NO2-NO3 Nitrogen (mg/l)	.089	.104	.235	.391	.101	.109
Total Phosphorus (mg/l)	.057	.069	.114	.128	.029	.011

*From sediment **From plankton

1/ Data does not reflect seasonal variations.

FLINT CREEK - HEAVY METALS

Note: RAW DATA Samples Obtained 11/5/74

Location - FC-4

Metal	Mg/liter	Mg/liter
Mercury (Hg)	less than	0.0002
Aluminum (Al)		0.168
Cadmium (Cd)	less than	0.010
Cobalt (Co)	less than	0.100
Copper (Cu)		0.025
Lead (Pb)	less than	0.100
Zinc (Zn)		0.059
Chromium (Cr)	less than	0.005
Arsenic (As)	less than	0.005
Nickel (Ni)		0.0088
Manganese (Mn)		0.045

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
ROCHESTER FIELD OFFICE
P.O. BOX 5036
ROCHESTER, NEW YORK 14627

February 12, 1975

Mr. Bernard Ellis
U.S. Dept. of Agriculture
Soil Conservation Service
New York State Office
Room 400, Midtown Plaza
700 E. Water Street
Syracuse, New York 13210

Dear Bernie:

Enclosed are the results of the pesticide analyses for the November 5, 1974 Flint Creek Survey as received from our Edison Laboratory and as we discussed over the phone today. The EPA sample numbers 0978, 0979, and 0981 correspond to stations FC-4, FC-3, and FC-2, respectively. These are water quality analyses and thus show lower concentrations than might be expected from sediments.

If there are any questions on the data, please let us know.

Sincerely yours,

R.D. Green

2-SA-TEC

Feb. 5, 1975

Flint Creek Pesticide Results

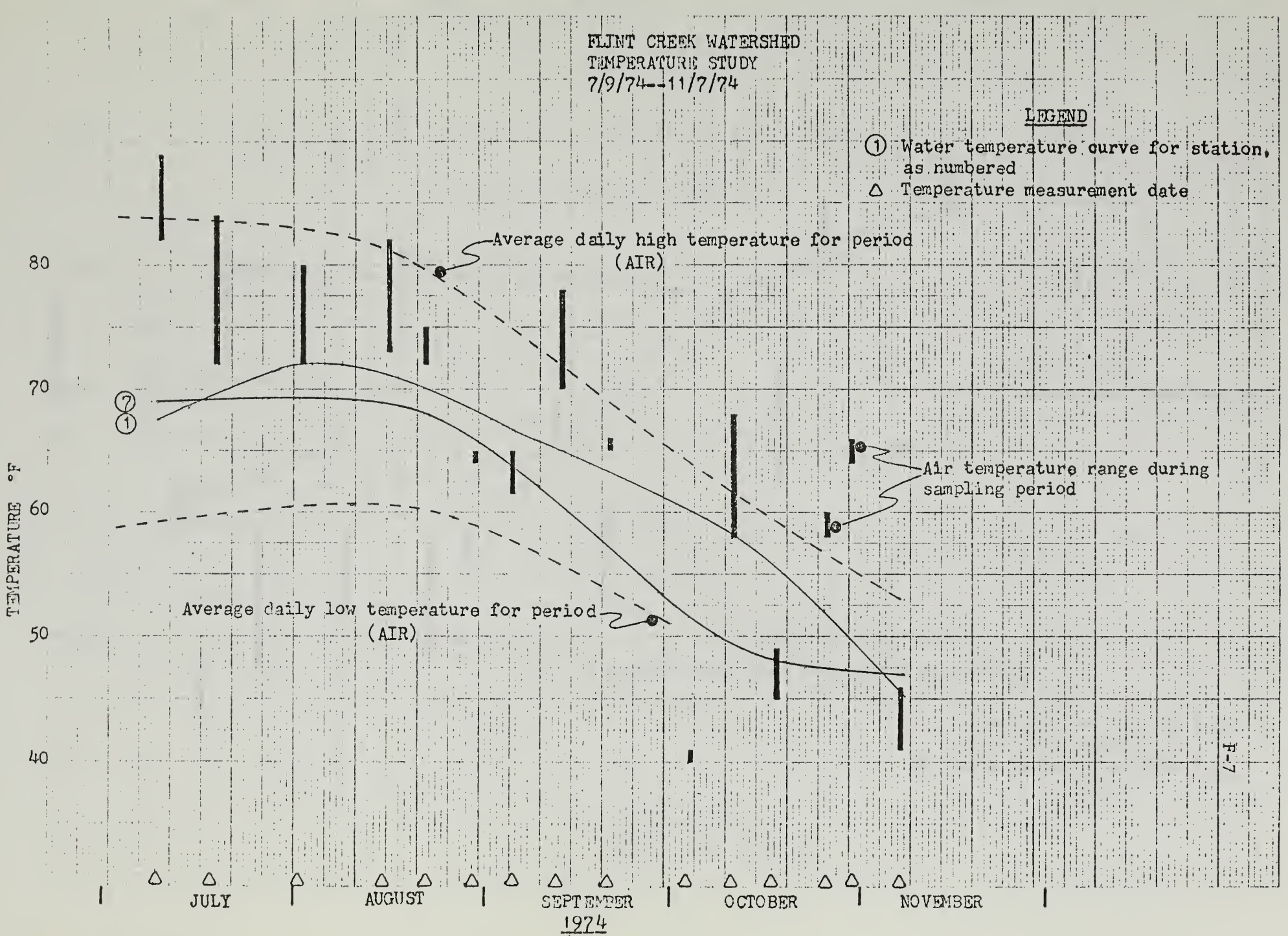
Larry Moriarty, EPA
Rochester Field Office
Rochester, N. Y. 14617

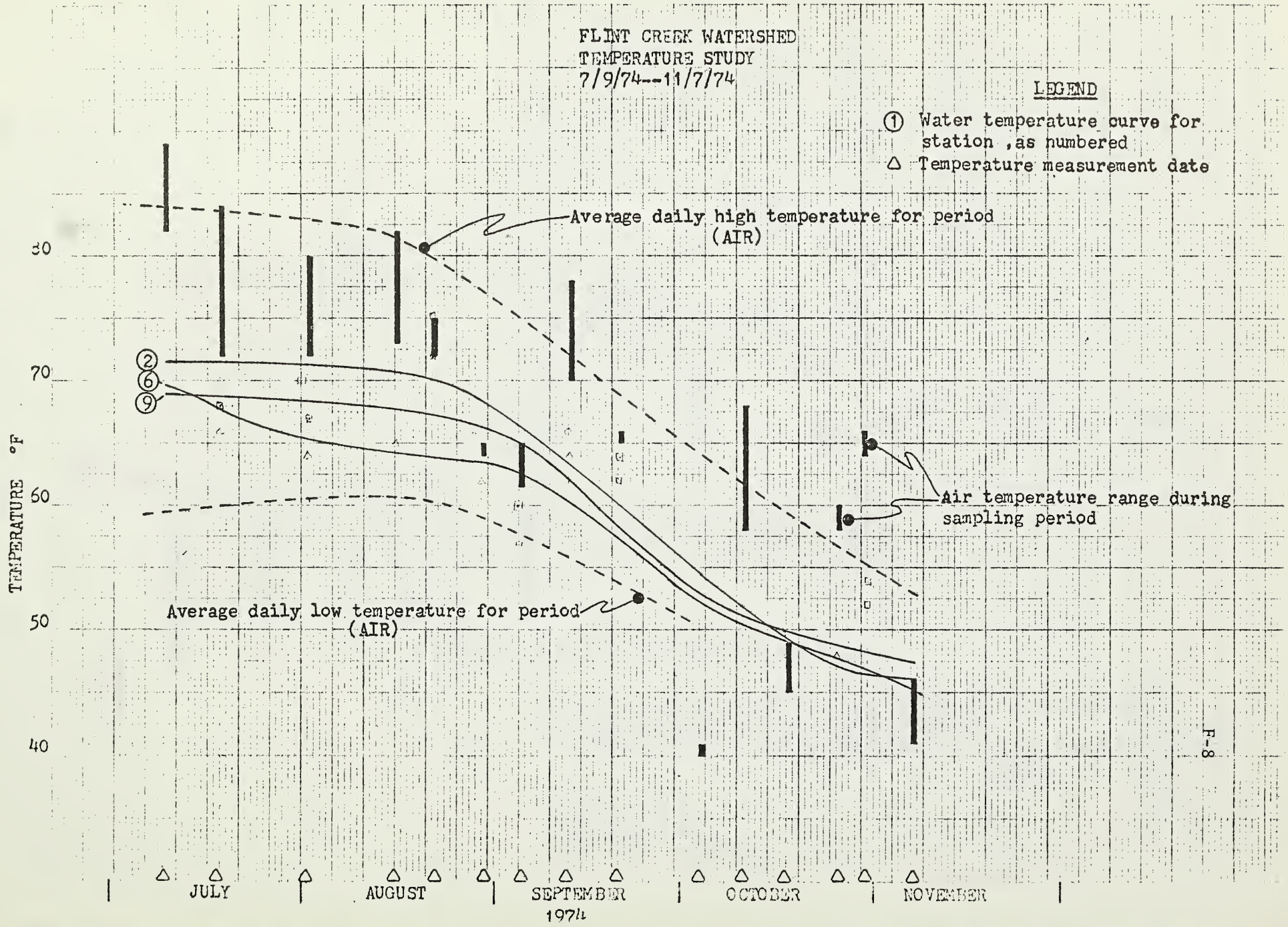
Chlorinated Pesticide ug/l	EPA Sample No. 0978	EPA Sample No. 0979	EPA Sample No. 0981
Aldrin	0.005	0.005	0.005
Heptachlor epoxide	0.008	0.008	0.008
P.P' DDE	0.011	0.011	0.011
Endrin	0.024	0.024	0.024
P.P' DDT	0.024	0.024	0.024
Heptachlor	0.005	0.005	0.005
Chlordane	0.009	0.009	0.009
OP DDD	0.024	0.024	0.024
Dieldrin	0.017	0.017	0.017
Methoxychlor	0.089	0.089	0.089

Levels of the above chlorinated pesticides were all at the detection limits of the test for all three samples.

Francis T. Brezenski
Chief
Technical Support Branch

cc: Robert Dona
Rochester Field Office


FLINT CREEK WATERSHED
TEMPERATURE STUDY
7/9/74--11/7/74
LEGEND
① Water temperature curve for station, as numbered
△ Temperature measurement date
Average daily high temperature for period (AIR)
Air temperature range during sampling period
Average daily low temperature for period (AIR)
TEMPERATURE °F
80
70
60
50
40
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
1974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7/9/74--11/7/74
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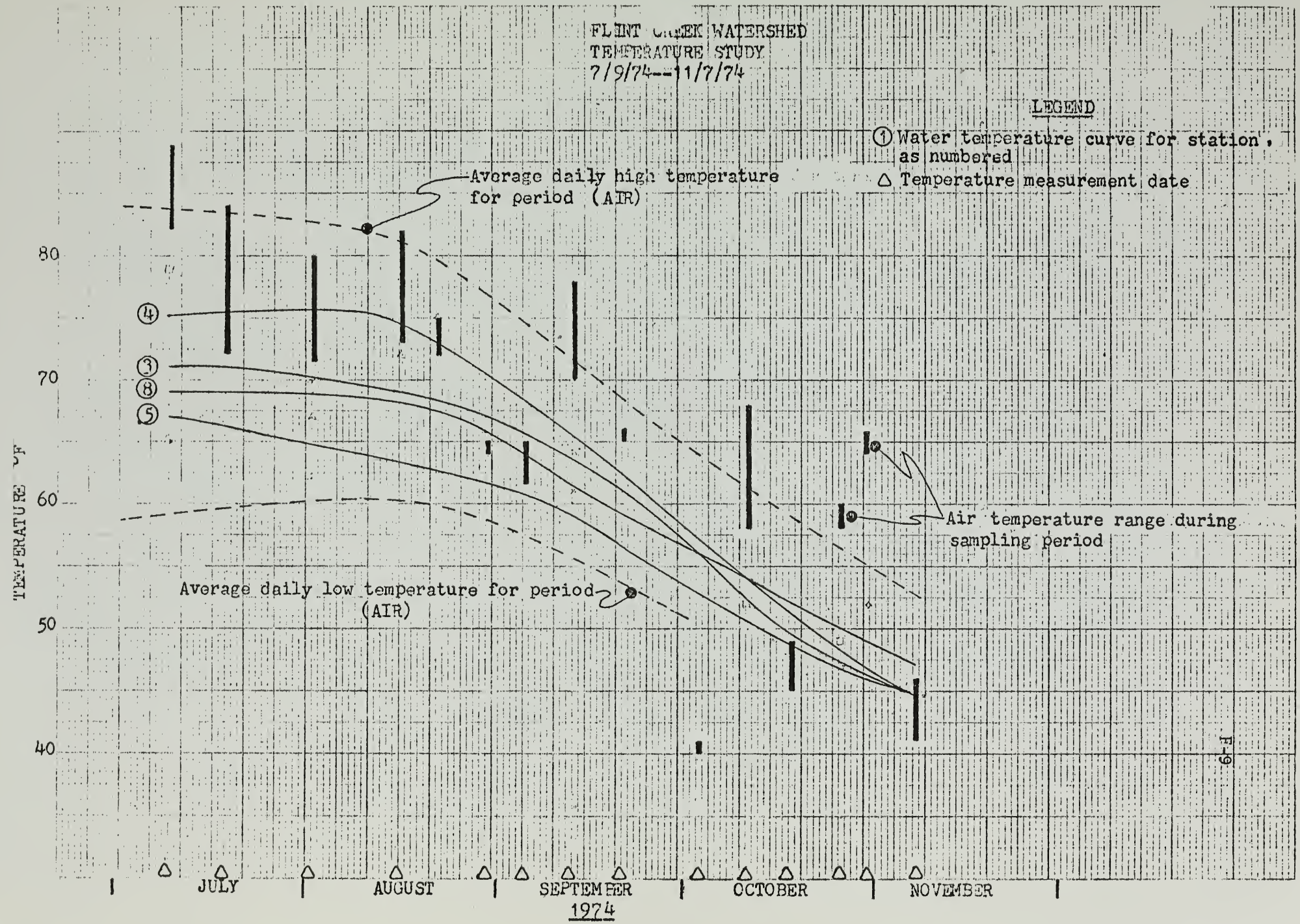
△ Temperature measurement date
Average daily high temperature for period (AIR)
Average daily low temperature for period (AIR)
Air temperature range during sampling period
TEMPERATURE °F
80
70
60
50
40
②
⑥
⑨
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
1974


FLINT CREEK WATERSHED
TEMPERATURE STUDY
7/9/74--11/7/74
LEGEND
① Water temperature curve for station, as numbered
△ Temperature measurement date
Average daily high temperature for period (AIR)
Air temperature range during sampling period
Average daily low temperature for period (AIR)
④
③
⑧
⑤
80
70
60
50
40
TEMPERATURE °F
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
1974
F-6

APPENDIX G

ARCHAEOLOGICAL SURVEY
OF THE
FLINT CREEK PROJECT
FOR THE
UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

by

PETER P. PRATT
STATE UNIVERSITY OF NEW YORK AT OSWEGO

and

MARJORIE K. PRATT
ITHACA COLLEGE

NOVEMBER 24, 1974

TABLE OF CONTENTS

INTRODUCTION

In October, 1974, the authors were contacted by Dr. Marion E. White, Chairman of the Contracts Committee of the New York Archaeological Council regarding an archaeological survey of the Flint Creek Project area in Yates and Ontario Counties, New York, for the United States Soil Conservation Service. The proposed Flint Creek Project is to consist of a dam on Nettle Creek south of Potter (Structure 2A), a dam on Flint Creek south of Potter (Structure 1D), and approximatly 23 miles of channel widening north of Potter. Map I (page 19) shows the location of these areas.

The archaeological survey undertaken of the Flint Creek Project area was designed to locate any site of historic or prehistoric interest which might be damaged through the implementation of the proposed project. The survey consisted of three principle parts: 1) a literature search to determine any existing knowledge of sites in the affected areas, 2) an on-foot field inspection of the areas for evidence of former occupation, and 3) the preparation of the present report with recommendations concerning our findings.

Work undertaken for this survey was done during late October and November, 1974. This report presents the results of these investigation and consists of three parts: Methodology, Areas of Archaeological Interest, and Recommendations and Conclusions. Additionally, appendices present maps and the literature search.

I. METHODOLOGY

1. Planning Strategy

Since the areas in question were to be modified through flooding or construction, it was determined that a comprehensive survey should be undertaken which aimed at the location of all significant archaeological sites. To this end the following research strategy was employed: a) survey of literature, b) preliminary survey trip by the principal investigators, c) intensive period of field investigation by a large crew, d) follow-up survey by principal investigators.

It was felt that the literature survey should be undertaken at the earliest possible time so that the results would be available for subsequent consideration. See "Survey of the Literature" below for details of this aspect of the survey.

The preliminary survey by the principal investigators was designed to meet district Soil Conservation Service personnel , secure additional appropriate maps, secure access to land for testing, inspect the physical terrain to be tested, consult with local residents who might have knowledge of archaeological materials from the area, and establish a field headquarters. This trip took place on October 31, 1974. Details of the methodology employed are discussed under appropriate headings below.

The intensive period of field investigation took place during a four-day period between November 7 and November 10. During this time up to 10 people participated in the inspection of the terrain for archaeological materials. The methodology

used is discussed below. Following this period the principal investigators returned to the area to follow-up leads and do further testing of areas determined by the crew to warrant further investigation. This trip took place November 16.

2. Staffing

The crew was composed of students with relevant archaeological experience from State University of New York at Oswego, Ithaca College, and Cornell University.

3. Survey of the Literature

The responsibility of examining maps, documents and other published sources was undertaken by Mr. Lewis C. Rubenstein, National Registar Supervisor, Division of Historic Preservation, Albany, New York, and by Ms. Betty Prisch, assistant to Mr. Charles F. Hayes III, Curator of Anthropology and Director of the Rochester Museum and Science Center, Rochester, New York. Neither Mr. Rubenstein nor Ms. Prisch located any sites in their search of the literature that were in the project area. Their reports are attached as Appendix II.

4. Consultation with Soil Conservation Officers

Consultation with Soil Conservation Officers Mr. Douglas Burdick of Penn Yann and Mr. John Rappa of Canandaigua was effected October 31. At this time topographic and aerial maps were secured from the USSCS office in Penn Yann and the location of the project was plotted on these maps as taken from a dilineation of the project by Mr. Burdick on a large

composite of 7 1/2 minute series topographic maps. Mr. Burdick recommended seeing the following local residents who reportedly had knowledge of archaeological materials: Mrs. James Gule, Mrs. Blanche Baker and her son Mr. Gordon Baker all of R.D.1, Middlesex, New York.

5. Permits for Access to Land Holdings

Soil Conservation Officers Mr. Burdick and Mr. Rappa acting under the aegis of Mr. Bernard S. Ellis, Senior Staff Geologist for the U. S. Soil Conservation Service at Syracuse, secured permits for us to do shovel testing including the opening of up to 2 foot square holes which were to be backfilled immediatly following excavation. The permits covered the period October 15, 1974, through December 31, 1974.

6. Field Survey

The methodology used during the field survey of the dam areas and the channel widening areas differed slightly and will be treated separately.

A. Channel Widening Areas

Approximately 23 miles of ~~irrigation~~ channels are scheduled for widening. These channels are illustrated on Map 1, page 19, and Map 3, page 21. A two-man crew examined each channel with one crew member inspecting each side of the channel. Where the landadjacent to the channel had been plowed and the surface was clearly visible surface inspection for archaeological materials was deemed sufficient. If visibility was obstructed

due to overgrowth or other impediments test pits were dug at 200 foot intervals. Test pits averaged 2 feet in diameter and were dug to subsoil or to a maximum depth of 3 feet. Additionally, areas nearby the channels or between test pits which looked archaeologically promising were tested.

Records were made on each channel including : location of the channel, topographic and ecological features, and the nature of the testing. Materials recovered from testing were placed in labled plastic bags. Note was also made of any area which warranted additional testing by the principal investigators.

B. Dam Areas

Two dams are proposed, one on Flint Creek (Map 1, page 19, and Map 4, page 22), and one on Nettle Creek (Map 1, page 19, and Map 5, page 23). The areas to be effected by the dams were divided in to a series of transects located at 500 foot intervals. A two-man crew used a topographic map and compass to follow each transect, digging test pits each 200 feet. Test pits averaged 2 feet in diameter and were dug to subsoil or a maximum depth of 3 feet.

If it was impossible to examine over one third of a transect an alternative transect was selected 250 feet left of the original transect. If it was impossible to test this alternative transect a second alternative was selected 250 feet right of the original transect. In the case of a test pit which could not be executed at the 200 foot interval, it was placed as close as possible with its location noted.

In addition to the transects the crew examined an area 250 feet to either side of the transect. Any area which looked archaeologically promising was tested and note made of its location. Areas between test pits along the transect which looked promising were also tested.

Notes were made on each transect including : location of the transect, topographic and ecological features, nature of testing, additional areas tested, and any area which needed further special attention by the principal investigators.

7. Follow-up Survey

Following the period of intensive field investigation with the large crew, it was necessary for the principal investigators to return to the area to follow up leads turned up by the crew and to further test several reported areas of potential archaeological interest. At this time several additional local residents were interviewed including Mr. Bert Lafler of Canandaigua.

II. AREAS OF ARCHAEOLOGICAL INTEREST

Although no sites were revealed through survey of the literature (Appendix II), consultation with local residents disclosed four locations where archaeological materials had been recovered, and our on-foot survey revealed an additional four locations. Discussions of each of these locations follows:

1. Location # 1: Possible Prehistoric Burial Plot and Camp Site, Flint Creek Valley, on James V. Gule property (R.D.1, Middlesex, New York 14507, 315-584-3376)

In an October 31 interview Mrs. James V. Gule reported that some 20-30 years ago one of several small mounds on her property (then owned by Floyd Lafler and purchased from him in 1946) had been opened to reveal an Indian burial. This burial, Mrs. Gule related, contained the skeleton of a man and a boy who were accompanied by a bow and arrows (Mrs. Gule asked that the identity of the excavators be kept confidential). Mrs. Gule went on to note that these mounds, which were a foot or so high and but a few feet in cross dimensions were in the forest near Flint Creek to the left (i.e. West) of her lane.

Mrs. Gule also noted that Mr. Bert Lafler, son of the former owner of the farm, and others used to walk her cornfields near the creek in search of arrowheads (location 1, Map 2, page 20, and Map 4, page 22), but that she herself could find none there. Mrs. Gule also recalled that Mrs. Blanche Baker of the nearby village of Potter had mentioned to her that there was a stone fording place across the creek somewhere to the north of the Gule farmhouse.

On-site examination of the Gule's property failed to produce any evidence of Indian occupation. Consultation with Mr. Bert Lafler revealed that he had indeed found arrowheads on the property many years ago on a knoll in what is now the Gule's "20 acre lot". Years ago he sold these arrowheads along with other Indian artifacts which he had purchased in an antique store to a James Makopenoo of Gorham.

As for the burials, Mr. Lafler noted that they were not near the creek but rather on a knoll next to the Italy Valley Road just south of the Gule House. The burials had been found by one of Mr. Lafler's brothers while digging gravel when Mr. Lafler was about 18 (i.e. about 1913). The first burial to be located lacking a skull whereas the second seemed to be complete. The first skeleton was turned over to the sheriff whereas the other was reburied at the bottom of the gravel pit.

After intense investigation of the area, we suspect that the burial mounds referred to by Mrs. Gule were tree falls (Mr. Gule later mentioned that the mounds in question were 4-5 feet long and 3-4 feet wide which tends to confirm our suspicions that these indeed were natural phenomena). As for the location where arrowpoints used to be found we reexamined the area again after talking with Mr. Lafler locating nothing. We therefore believe that the occupation must have been of short duration with all surface evidence of it being lost through intensive plowing.

7. Location #2: Possible Brick Kiln, Flint Creek Valley, on Gordon Baker Property (R.D.1, Middlesex, New York 14507, 315-584-6834).

On the Gordon Baker property bording the marshland which flanks the west side of Flint Creek, Mr. Baker plowed through what seems to be a brick kiln (location 2, Map 2, page 20, and Map 4, page 22). Both glazed and unglazed bricks are found concentrated in a circular patch of approximatly 90 feet in diameter topping a slightly elevated knoll. The bricks are

located in a sandy loam which evidences burning. No other archaeological materials (such as china, nails or other refuse) were observed. The site is likely 19th Century in age at which time the valley seems to have been first occupied with European settlers.

3. Location #3: Possible Prehistoric Site, Flint Creek Valley, on Gordon Baker Property (R.D.1, Middlesex, New York 14507, 315-584-6834).

Again on the Gordon Baker property bordering the marshland flanking the west side of Flint Creek, Mr. Baker said that years ago people occasionally found arrowheads on the drier land now in winter wheat (location 3, Map 2, page 20, Map 4, page 22). An on-site examination of this area failed to produce any evidence of occupation though we were not able to test pit due to the land being in winter wheat. We suspect that, as at Gule's, the site or sites which were likely very small have been plowed and picked over for artifacts to such an extent that they are no longer recognizable as sites. Test pitting the area following the wheat harvest might show evidence of occupation.

4. Location #4: A Stray Projectile Point, Flint Creek Valley, on the James V. Gule Property (R.D.1, Middlesex, New York 14507, 315-584-3376).

Mr. James Gule reported that his granddaughter had found a flint projectile point two years ago on the Gule property near a stream bank on the west side of and immediately next to the Italy Valley Road (location 4, Map 2, page 20, and Map4, page 22

On-site examination of this general location produced no additional evidence of archaeological occupation.

5. Location #5: An Historic Foundation, Nettle Creek Valley, on Sherman W. Savage Property (R.D.1, Rushville, New York 14544, 315-584-6464).

A 15-20 foot rectangular stone foundation was observed cut into a sandy knoll on a ridge bordering the marshland on the west side of Nettle Creek on the Sherman Savage property (location 5, Map 2, page 20, and Map 5, page 23). No wall was present on the east side of the structure, whereas the remaining three walls which lay flush against the cut faces of the knoll, were still standing to approximatly 2 1/2 feet high. Test pits in the interion of the structure revealed a stone floor and produced assorted refuse including an intact Certo jar, a portion of a canning jar and modern nail. Interestingly no evidence of a chimney was in view.

Mr. Savage checked with neighbors who had lived in the area for 70-80 years and no one recalled anyone having lived in this structure. It is therefore likely 19 th Century in date. The refuse appears more recent however and may be intrusive relating to former residents of the farm--either a Mr. Bern Wyman or his father-in-law Mr. George Halstead who owned the farm before Mr. Savage purchased it.

6. Location #6: Prehistoric Seneca (?) Iroquois site, Nettle Creek Valley, on Vincent G. Bedient property (R.D.1, Middlesex, New York 14507, 315-584-3279).

In an approximatly 6 acre cornfield on a low rise some 235 feet from Nettle Creek and some 528 feet from the

northwest corner of the cornfield at the creek bank is located the approximate center of a prehistoric Iroquois site (location 6, Map 2, page 20, and Map 5, page 23). The area of occupation appears to cover some 200 feet N-S and some 50 feet E-W. The site is distinguished by a thin scattering of charcoal particles, fire-cracked stone, flint chips, burned animal bone, and occasional potsherds. One sherd of which only the upper rim section was present was either Hummel Corded or Danville Corded. A small fragment of human humerus (?) may mark the location of a burial plot on the western periphery of the site.

Judging from its apparently elongated shape, the site consists of one longhouse or several smaller houses strung out in a N-S direction along the higher, better drained central section of the field. The site may be a small early Seneca village or a camp or hamlet relating to a larger later site. Mr. Bedient has been advised of the general location of the site and is agreeable to further investigation.

7. Location # 7: Historic Well, Nettle Creek Valley, on Sheldon Bay Property (R.D.1, Rushville, New York 14544, 315-584-3449).

At the northern extremety of the Sheldon Bay property is located a field stone-lined well of approximatly 8 foot diameter (location 7, Map 2, page 20, and Map 5, page 23). The well is almost completely filled in. No evidence of habitation was located in land subject to flooding in the area though there may be evidence of house foundations on higher elevations which were not within our province to examin.

According to Mr. Bay, on the high land further to the east and close to Friend Road there had once been a farmhouse owned by the late Mr. Floyd Lafler. Mr. Bay did not know of anyone ever having lived close to the creek or the lowland.

8. Location #8: Historic House or Cabin Site, Nettle Creek Valley, on Sheldon Bay Property (R.D.1, Rushville, New York 14544, 315-584-3449).

On the east side of northernmost of the knolls which has been quarried for gravel on the Sheldon Bay property is an area some 75 feet in diameter which in our testing produced bricks, ashes and ceramics (location 8, Map 2, page 20, and Map 5, page 23). This area must have been originally flush against the knoll before the latter was partially removed in gravel removal operations. At its southern edge the site comes to within a few feet of Nettle Creek, but does not appear to have been damaged by widening the creek channel.

As in the case of Location #7 the property owner Mr. Sheldon bay knew of no one ever having lived in this area of the property. Preliminary study of the materials recovered together with consultation with Mr. Gordon C. DeAngelo, Secretary-Treasure of the Northeast Historical Archaeological Council indicates that the site is likely 19th Century.

III. RECOMMENDATIONS AND CONCLUSIONS

1. Location # 1.

The burials reported from the Gule property seem to be above the effected area. No trace was found of the reported

camp site and we can only conclude that it was a small site which has been destroyed through years of plowing. No further work is recommended on Location #1.

2. Location # 2.

The brick kiln reported on the Gordon Baker property probably relates to early settlers of the Flint Creek area in the 19th Century. This site warrants further investigation and probable excavation.

3. Location # 3.

The exact location and nature of this reported possible prehistoric camp site could not be fully investigated because the land is currently in winter wheat. Further testing of the area after the wheat harvest is called for.

4. Location # 4.

The area in the vicinity of the reported projectile point find was examined and no additional materials were found. No further investigation is necessary.

5. Location # 5.

The stone foundation on the Sherman Savage property probably relates to a 19th Century occupation and is in need of further investigation and probable excavation.

6. Location # 6.

The Prehistoric Iroquois site on the Vincent G. Bedient property may be an early developmental Seneca site or a camp or hamlet related to a larger late village. Further investigation is warranted and excavation is recommended as little is known

about either type of site.

7. Location # 7.

The well on the Bay property seems not to be related to nearby occupation in the area. Testing around the well yielded no refuse. Further investigation would not seem to be fruitful and is not recommended.

8. Location # 8.

The historic site on the Bay property probably relates to a 19th Century house or cabin. Further investigation and possible excavation is warranted.

9. Recommended Research Strategy and Budget.

It is recommended that this additional work be carried out by a field and laboratory crew hired for a 45-day summer field season. The crew would consist of a director, assistant-director-crew chief, 6 field crew members and 3 laboratory crew members. One field crew member should have surveying experience, one laboratory crew member should be an historic sites specialist, one a prehistoric specialist and the third have some cartographic experien

From our initial assessment of the nature of the sites needing salvage, it is recommended that the crew divide its time so as to spend approximately 50% on the Bedient site (location 6), 35% on the Bay site (location 8), 10% on the Baker site (location 2) and 5% on the Savage site (location 5).

The research design recommended is to spend one day intensively testing eah site to delimit its size. A sample of approximately 10% would then be excavated by hand. No need is

seen to measure the exact location of artifacts in the topsoil as all four sites have been plowed. Excavating by shovel with soil being screened for artifacts through ¼" mesh should probably be adequate. Flotation should be undertaken on a sample of soil especially from features on each site. Attention should then be devoted to recovering information about the settlement pattern of the respective sites. This might in some cases, (e.g. the Bedient site), involve using a bulldozer to strip the site of topsoil. Appropriate topographic and settlement pattern maps should be completed for each site.

Laboratory work should include washing and cataloguing all specimens recovered, followed by analysis of these materials. Specialists would probably need to be consulted in the areas of geology, faunal analysis, ethnobotany and historical materials. Carbon 14 dates should be obtained from the Bedient site if appropriate organic samples are recovered. All field maps should be converted into final finished maps in the laboratory.

The attached budget estimates the costs which would be incurred in the recommended salvage. It includes salaries for the above mentioned personnel, expenditures for equipment and supplies needed to carry out the project, a contingency fund to cover unforseen expenses encountered during the course of excavation, and New York Archaeological Council overhead. A final report would be prepared and submitted after the period of field work.

This budget does not include any excavation on Location

ESTIMATED BUDGET

Salaries and Consultants

Director $80/day		
Field work 60days	$4800	
Report 30 days	2400	
Assistant Director-Bookeeper-Crew Chief $60/day, 50 days	3000	
Crew member-surveyor $40/day, 45 days	1800	
Crew member (6) $30/day, 45 days	8100	
Laboratory: Historical Specialist $40/day, 45 days	1800	
Laboratory: Prehistorical Specialist $40/day, 45 days	1800	
General Laboratory-Cartography Specialist $30/day, 45 days	1350	
Consultants: Fauna, Ethnobotany, Geology, Historical Materials, etc. $100/day, 10 days	1000	
	$26050	$26050

Equipment and Supplies

Equipment Rental (transit, camera, shovels tapes, wheel barrows, stakes, microscope, etc)	$ 500	
Expendable Equipment (notebooks, field forms, artifact bags, stakes, film, chemicals, paper, etc.)	1000	
Rental Bulldozer, Bucket truck	750	
Rental Field Headquarters and Laboratory	300	
Typing, Xerox, Phone	1000	
Transportation	400	
Carbon 14 Dates	330	
Computer time	500	
	$4780	$ 4780

Subtotal	$30830
Contingency Fund 10% of $30830	3083
	$33913
New York Archaeological Council 15% of $33913	5087
Total	$39000

3, the area currently in winter wheat. If, after the testing recommended above, excavations seemed warranted, a supplemental budget would have to be submitted.

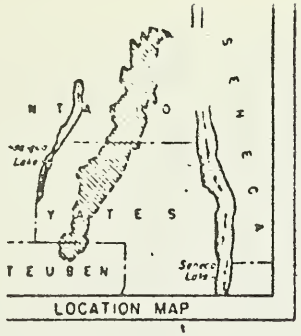
10. Summary.

In summary, no further work is recommended on three locations (1, 4 and 7). Further testing is recommende on the area currently in winter wheat (3). Further investigation and excavation is recommended at four locations (2, 5, 6 and 8).

Budgetary recommendations include a summer season's excavation and data processing by an 11 man staff. Work time estimates, in keeping with the size and complexity of each of the archaeological locations, has been assessed at 50% for location 6, 35% for location 8, 10% for location 2 and 5% for location 5. Research design consists of site delineation, sampling, establishing and mapping settlement patterns, sifting and flotation, data processing and report writing.

Expenses include salaries, equipment, office and laboratory space, typing, xeroxing, telephone, transportation, Carbon - 14 dating, computer time, a 10% contingency fund and New York Archaeological Council overhead, bringing the total to $39000. A supplementary budget would be submitted in the event that investigation of the area presently in winter wheat (location 3) calls for salvage excavation.

APPENDIX I--MAPS



U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Project map

FLINT CREEK WATERSHED

ONTARIO, STEUBEN AND YATES COUNTIES, NEW YORK

August 1969

LEGEND

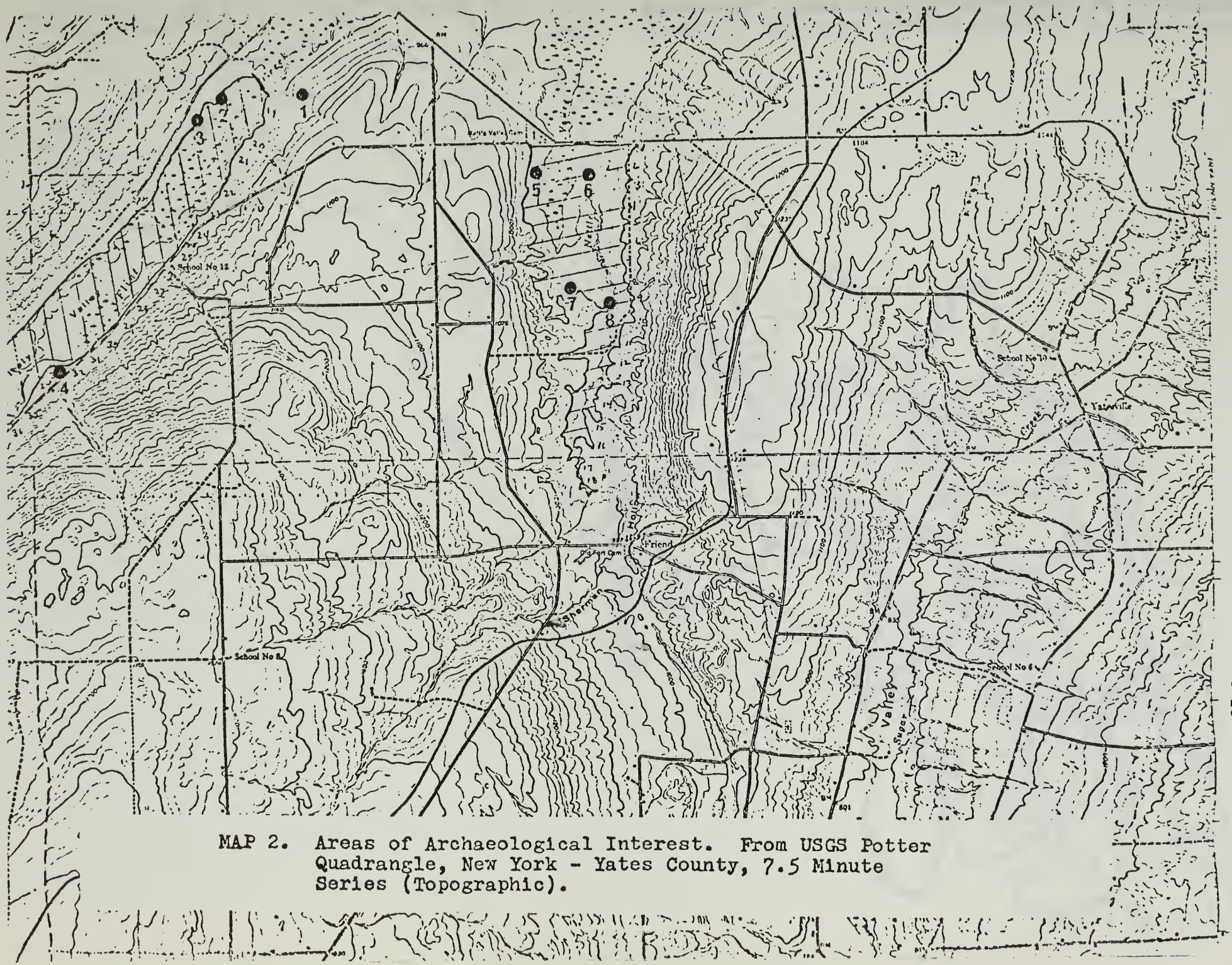
Roads
- Good motor
- Poor motor
- Railroad
- Stream
- County line
- Town line

579+80
724+40
99+80
351+60
172+00
A
LATERAL-1A
LATERAL-1B
LATERAL-1C
LATERAL-1D
LATERAL-1E
LATERAL-1F
LATERAL-1G
LATERAL-1H
LATERAL-1I
LATERAL-1J
LATERAL-1K
LATERAL-1L
LATERAL-1M
LATERAL-1N
LATERAL-1O
LATERAL-1P
LATERAL-1Q
LATERAL-1R
LATERAL-1S
LATERAL-1T
LATERAL-1U
LATERAL-1V
LATERAL-1W
LATERAL-1X
LATERAL-1Y
LATERAL-1Z
LATERAL-13
Phelps
Pierson Corners
Seneca Castle
Flint
Stanley
Gorham
Benton
Poller
Friend
Jerusalem
Italy
Middlesex
Hopewell
ITALY VALLEY ROAD
D.A.=7.12 sq.mi.
D.A.=26.3 sq.mi.
UPPER FIVE MILE CREEK WATERSHED
Scale 1:31,680
Miles

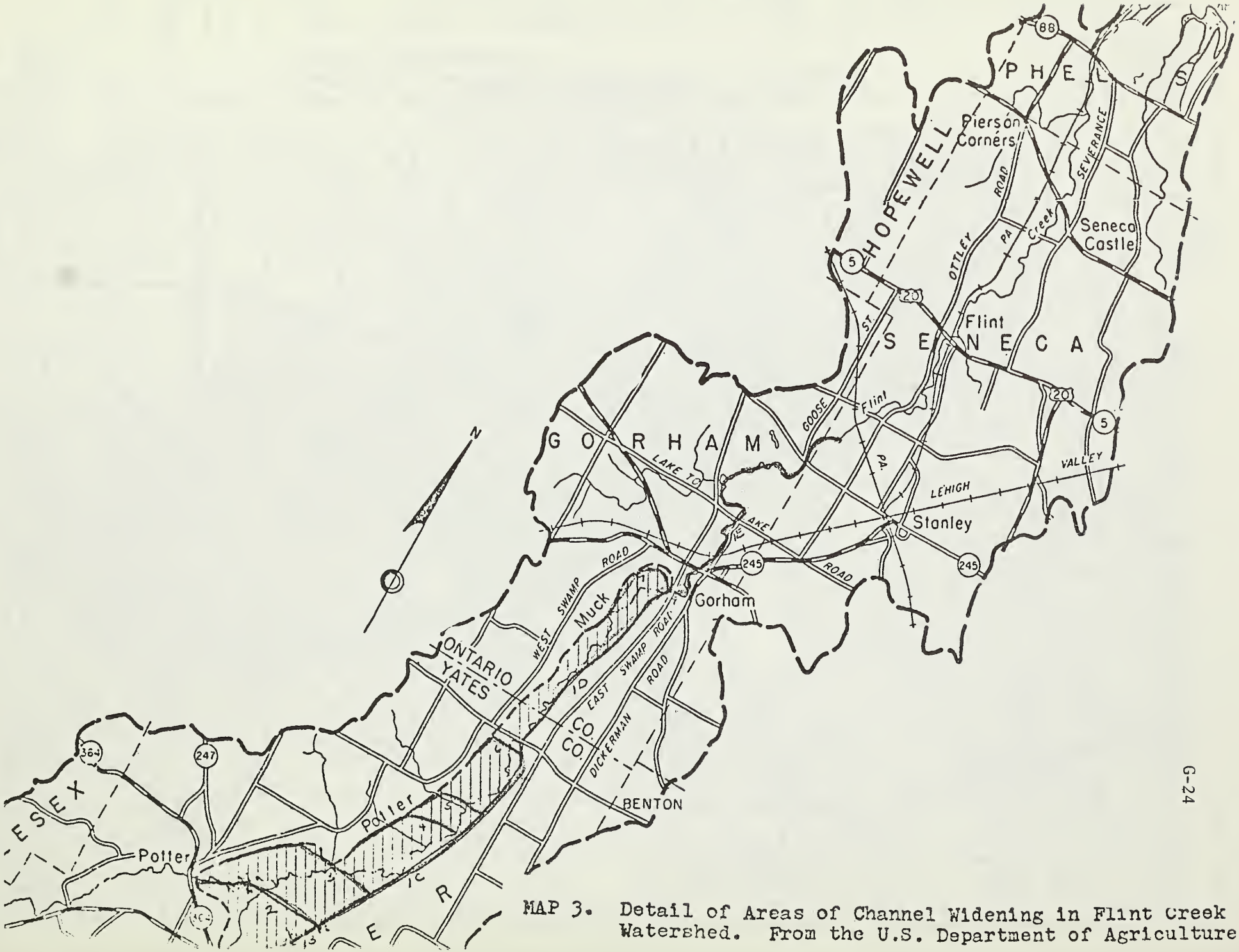
- Watershed project boundary
- Drainage area controlled by structure
- Area benefited
- D.A. 7.12 sq.mi. — Drainage area in square miles
- A — Damage reach

PROJECT MEASURES
- 1D — Floodwater retarding structure
- 2A — Multiple-purpose structure
- 2 — Drop structure
- 1 — Water level regulation structure
- Stream channel improvement
- 99+00 — Stationing

G-22



MAP 2. Areas of Archaeological Interest. From USGS Potter Quadrangle, New York - Yates County, 7.5 Minute Series (Topographic).



MAP 3. Detail of Areas of Channel Widening in Flint Creek Watershed. From the U.S. Department of Agriculture

APPENDIX II--LITERATURE SURVEY

Flint Creek Watershed Project

Sections 1D and 2A

A literature search for areas of archaeological sensitivity has been made for sections 1D and 2A of the Flint Creek Watershed project, Yates County, New York.

One site, on Lot 48 in Jerusalem township, comes close to the 2A section along Nettle Valley Creek. This is reported by Parker (1922:716-717) and Beauchamp (1900: 165) who repeat information also found in Aldrich (1892) and Cleveland (1873). The site was believed to be an earthwork, known locally as the "Old Fort," in Sherman's Hollow, near an old school house and on the north line of the township. Beauchamp reports that pottery and a stone mortar were found and that a cemetery was nearby.

No sites have been found which impinge upon Section 1D which runs along Flint Creek in Italy and Middlesex townships. Beauchamp (1900:257) reports the aboriginal name of Flint Creek as Ah-ta-gweh-da-ga, "the place where there is flint," but Aldrich (1892:482) states that the creek was named for a pioneer settler of Italy Hollow. No mention has been found that the Indians actually found flint in the area. Far from being a center of aboriginal activity, Flint Creek's course, in Potter township at least, formed extensive swamps where it spread on level land (Cleveland 1873:767). In the more rugged terrain of Italy

and Middlesex townships, the creek served as a power source for early settlers.

The Moravian missionaries, Cammerhoff and Zeisberger, crossed Flint Creek on their trip from the Cayugas to the Senecas, but farther north, between Geneva and Canandaigua (Beauchamp 1916; Conover 1889).

Parker reports (1922:717) three village sites in Jerusalem township, but all are south of the project. Parker's #4 was a village site on the Paddock Farm, one mile southwest of Italy Hill; three grooved boulders found. #5, also a village site, was in Italy Hollow, and #6, a village site with an orchard, was one mile north of the Big Elm tree in Italy Hollow. Unconfirmed reports state that the Big Elm tree was a sachem's council meeting place.

The two available maps, Burr 1829 (reprinted 1840) and Everts Ensign & Everts 1876, produce no additional archaeological data.

A search of records available in the Rochester area has uncovered no further evidence of archaeological sites in this section of Yates County. It is possible that an inquiry to the Beauchamp chapter of the New York State Archeological Association would reveal additional unrecorded sites.

Betty C. Prisch
November 1, 1974

References

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Burr, David H. — Map of the Counties of Ontario and Yates. 1829. Reprinted 1840 by Stone & Clark, Ithaca, New York.

Cleveland, Stafford C. — History and Directory of Yates County. Penn Yan, New York. 1873.

Conover, George S. — Seneca Indian Villages. Principal Settlements between Canandaigua and Seneca Lake. Rochester Historical Society. 1889.

Everts, Ensign & Everts — Combination Atlas Map of Yates County, New York. Philadelphia. 1876.

NEW YORK STATE PARKS & RECREATION South Swan Street Bldg Empire State Plaza, Albany, New York 12223 Information 518 474 0456
Alexander Aldrich, Commissioner

G-29

August 6, 1974

Mr. Bernard S. Ellis
Senior Staff Geologist
U.S. Department of Agriculture,
Soil Conservation Service
Room 400 - Midtown Plaza
700 East Water Street
Syracuse, NY 13210

RE: Flint Creek Watershed, Ontario, Steuben and Yates Counties

Dear Mr. Ellis:

While, according to our present knowledge, the above project will not affect buildings or structures of historic merit, we must advise you that a number of archeological sites have been reported in the vicinity of the proposed project area.

The Rochester Museum and Science Center has the following sites on record: Plp 8, northwest of Phelps, Plp 11 east of Flint; Plp 24 northeast of Seneca Castle; Plp 2 near Gorham; Plp 21 near Gorham; and Pyn 2 east of Potter.

Because known archeological resources and possibly additional unreported sites may be affected by development of the watershed, we recommend that the areas in question be tested by a professionally recognized archeologist prior to any construction. We recommend that, as with several past projects, you contact the New York Archeological Council for the names of persons who would be available.

Sincerely,

Lewis C. Rubenstein

Lewis C. Rubenstein
National Register Supervisor
Division for Historic
Preservation

LCR/11